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3Com's LAN plan clouded by confusion

By Bob Brown
Senior Editor

SANTA CLARA, Calif. — 3Com Corp. and Microsoft Corp. are involved in discussions that could result in 3Com's virtual exit from the network operating system market, industry observers said last week.

Analysts and others say 3Com and Microsoft, the codevelopers of LAN Manager, are discussing their roles in future development, sales and support of LAN Manager and 3Com's version of the product, 3+Open. At issue is whether 3Com will continue to sell and support 3+Open Version 2.0 and shape future releases of the network operating system.

3Com wants to diminish its role in the network operating system business because of disappointing sales of 3+Open, observers said.

The company has also shifted its focus away from work group computing and is positioning itself as a provider of products and systems integration services for larger networks.

3Com acknowledged to analysts that it is talking with Microsoft but refused to comment on the nature of the discussions, despite growing user concern and

(continued on page 4)

Manning the controls at Vyvx NVN's Video Control Center.

Firm to build T-1 network to manage, control T-3 net

By Paul Desmond
Senior Editor

TULSA, Okla. — Vyvx National Video Network (NVN) last week announced it will build a 53-node T-1 network for the sole purpose of managing its nationwide T-3 fiber-optic net, which is used by television broadcasters to support video feeds.

The T-1 network will support a net management system that controls rerouting of Vyvx NVN's T-3 lines. In the event of a T-3 failure, the net management system will automatically transmit instructions over the T-1 net to T-3 switches so they can route around the failed T-3 link in less than two seconds. Today, Vyvx NVN personnel must intervene to reroute T-3 circuits.

Rapid response to network problems is required to meet the demands of major television networks that use Vyvx NVN to broadcast such high-profile events as the Super Bowl and the recent Economic Summit in Houston.

Broadcast giants such as ABC, CBS and the Cable News Network use Vyvx NVN's services to transmit video feeds from event sites back to their home studios, where they are distributed to affiliates by satellite, said Howard Meiseles, director of engineering.

(continued on page 30)

Microsoft multiplies LAN Manager power

Add-on software lets network operating system realize promise of new multiprocessing servers.

By Bob Brown
Senior Editor

REDMOND, Wash. — Microsoft Corp. last week unveiled software for LAN Manager that enables the network operating system to take advantage of multiprocessor personal computer-based file servers.

Microsoft's LAN Manager Multiprocessor Server Pak will enable users to allocate one Intel Corp. 80386 or 80486 processor on a multiprocessor system for network file service while supporting applications, such as a data base management system, on another processor in asymmetrical fashion.

Microsoft said it plans to enable LAN Manager to take advantage of more than two processors but not until Version 3.X of the OS/2 operating system is ready.

Multiprocessing support promises to improve LAN Manager performance and enable the network operating system to support a larger number of users. Those benefits will bolster LAN Manager as a platform for downsized host applications as well as client/server applications.

David Thacher, senior product manager for Microsoft's network business unit, said the introduction of LAN Manager Multiprocessor Server Pak addresses the need for network operating software designed for powerful multiprocessor servers.

The company had recently discussed with *Network World* its

(continued on page 4)

Dear Santa: Please bring network gifts

By Maureen Molloy
Staff Writer

Visions of skilled workers and unlimited budget dollars are dancing in the heads of many network managers this holiday season.

Universally accepted standards to link dissimilar network systems and an end to overhyped vendor products are also high on the wish lists net managers are sending to St. Nick this year.

James Dowell, manager of information systems at Valmont Industries, Inc. in Valley, Neb., a heavy equipment and agricultural sprinkler system manufacturer, said he wants Santa to stuff four extra hours per day into his stocking so he can complete his network projects on time.

He is also hoping for a bigger budget to hire more staff — a wish that, given the current economic climate, may be difficult for even Santa to deliver.

Glenn Miller, manager of worldwide videoconferencing at The Upjohn Co. in Kalamazoo, Mich., said a standard that would allow all videoconferencing net-

(continued on page 31)

NETLINE

IBM REVISES NETVIEW Version 2 pricing, undercutting rates set last fall and reducing costs for most users. Page 2.

WHILE RETAILERS BUSTLE during the Christmas season, their network managers put projects on hold. Page 2.

FOUR VENDORS CLAIM new protocol enhances router interoperability. Page 2.

STATE DEPT. CLEARS the way for private satellite firms to offer switched services. Page 3.

AT&T CORRALS TWO new Tariff 15 customers. Page 3.

IBM DELAYS shipment of OfficeVision for LANs. Page 3.

NETWORK WORLD welcomes industry guru Dixon Doll to its opinion pages. Page 19.

NEWSPAPER

FEATURE

Curtain raiser on '91: six hot technologies

By Salvatore Salamone
Features Writer

As perennial as this season's poinsettias is the quest for new networking technology.

And each year, the pace of technical introductions seems to accelerate. This year brought far too many important developments to squeeze into a brief list.

However, some of the innovations include true frame relay and 10BaseT products, as well as the launch of 384K and switched T-1 services. Work also progressed on cell relay and the Synchronous Optical Network standards.

Perhaps just as important as these innovations was the development of The Open Software Foundation's Distributed Computing Environment announced in May. This standard is likely to play a major role in the network configurations of the future.

A look back at some of this year's innovations raises the question of what important technical developments can be expected in 1991. For this rea-

(continued on page 21)

IBM's revamped NetView 2 price plan cuts user costs

Scheme announced in September would have cost some users more; new plan makes amends.

By Paul Desmond
Senior Editor

WHITE PLAINS, N.Y. — IBM last week unveiled a revamped pricing plan for Version 2 of NetView that significantly undercuts the prices originally announced for the product last September.

The new plan eliminates the NetView Standalone System Option as a separate package and, for the most part, reduces the prices for the other two NetView options: the Central System Option and Distributed System Option. Only users of low-end mainframes will pay higher prices.

Customers likely to realize the greatest benefit from the pricing changes are users with large multihost networks that have a centralized management structure (see graphic, page 29). Users with multihost nets that do not employ centralized management will also realize a price break over the September prices, although some said the new NetView packaging offers an incentive to rethink their net management strategy.

Users of the NetView Graphic Monitor Facility Workstation software will also get a big price break. The OS/2-based software, the workstation component of the graphical interface announced with Version 2, has dropped from $8,000 to $3,000.

(continued on page 29)

Retail net managers slow down for holiday season

Projects go on hold during stores' busiest time.

By Bob Brown
Senior Editor

Believe it or not, the holiday season is actually the slowest time of year for network managers at the nation's big retailers.

With stores packed full of Christmas shoppers and their companies ringing up a big share of their annual sales, network managers at retail firms do their best to become invisible. Any net upgrades or other network projects are generally wrapped up or put on hold by the end of October in order to avoid any inadvertent downtime during crunch time.

The holiday season is mostly a time for mapping out next year's network strategy, net managers at retail companies said.

"We want to get any changes in well before the Christmas rush," said Jim Broman, manager of telecommunications planning at Target Stores, Inc. in Minneapolis. "We put a moratorium on all network changes during the Christmas season. It's the only lull we have all year."

In the past few years, Target Stores has installed a very small aperture terminal net supporting more than 400 stores ("Retailer paints rosy picture of VSAT migration," *NW*, Oct. 22).

Heading into the Christmas

(continued on page 29)

Four vendors successfully test OSPF interoperability

By Ellen Messmer
Washington Correspondent

COLLEGE PARK, Md. — Four internetworking vendors last week said they have successfully conducted interoperability testing on their routers using the emerging Open Shortest Path First (OSPF) routing protocol to exchange information.

Officials from the companies — Advanced Computer Communications, Inc. (ACC), Proteon, Inc., 3Com Corp. and Wellfleet Communications, Inc. — said the tests' success proves that OSPF gives users greater flexibility to transmit data among different brands of routers on a Transmission Control Protocol/Internet Protocol net than is available with current routing protocols.

Of the four vendors that participated in the tests, only Proteon is shipping a router with support for OSPF — its p4200, which was released in October. The other three vendors are beta-testing routers with OSPF support, and they used prototypes of those products in the test. The vendors said they plan to ship OSPF routers by mid-1991.

OSPF is the next-generation routing protocol standard for TCP/IP networks. It is widely regarded as superior to the current Routing Information Protocol (RIP), the only TCP/IP standard

(continued on page 4)

Briefs

IBM quashes IIN reports. IBM last week denied reports it will combine the IBM Information Network (IIN) with BT Tymnet, Inc., the packet net owned by British Telecommunications PLC. The *London Financial Times* and *The Wall Street Journal* reported last week that IBM and British Telecom were close to reaching an agreement under which British Telecom would take over management of the IIN and combine it with Tymnet, while IBM would supply the hardware for the networks.

IBM, which typically doesn't comment on such reports, denied such an agreement was near. A spokesman said IBM talks to British Telecom regularly as it does with all its large customers. He said the carrier has offered IBM a proposal concerning the provision of new services, although he declined to offer details of that proposal. BT Tymnet was not involved in any of the discussions, the spokesman said. Officials at BT Tymnet's U.S. headquarters in San Jose, Calif., declined to comment.

DEC invests in computer firm. Digital Equipment Corp. last week made the biggest acquisition in its history, buying 65% of Mannesmann A.G.'s Computer Systems Division, which DEC said is the No. 2 domestic computer supplier in Europe. Purchase of the German-based company will enable DEC to expand its Unix-based offerings, according to John Smith, DEC's senior vice-president for worldwide operations. Other DEC officials said the acquisition will enable DEC to reach small and midsize European businesses.

PictureTel plans announcement. Peabody, Mass.-based PictureTel Corp., a leading manufacturer of videoconferencing products, last week said it will make a major product announcement next month. While the company declined to release any product details, Herb Maher, an analyst at Tucker Anthony, Inc. in Boston, said he expects PictureTel to unveil new, low-cost video coder/decoders and software that eliminates the picture distortion that plagues videoconferencing products running at speeds up to 384K bit/sec.

Ameritech BOCs file ONA plan. Ameritech last week said its five Bell operating companies were the first telephone companies to file an Open Network Architecture (ONA) plan with the Federal Communications Commission.

The proposed plan contains pricing for a wide variety of features, called Basic Serving Arrangements (BSA) and Basic Service Elements (BSE), that information providers can use to offer advanced telecommunications services.

Ameritech said the latest ONA filing is consistent with the company's initial ONA plan filed in February 1988 in that both explain how Ameritech companies will open up their networks. If approved, Ameritech BOCs will sell BSAs and BSEs in 19 areas including Chicago, Cleveland and Columbus, Ohio, Detroit, Indianapolis and Milwaukee, as well as several midsize cities and rural areas. Each Ameritech BOC will file similar tariffs with its public services commission in the next few months.

Santa delivers ISDN gifts. Golden Gate University received an early Christmas present in the form of $467,000 worth of Northern Telecom, Inc. switching systems, customer premises equipment and lines that the school will use in its planned Integrated Services Digital Network laboratory. The laboratory will offer students of the school's Telecommunications Management Department hands-on experience with digital switching systems and central office-based ISDN service.

Northern Telecom is, through a partnership with PacTel Meridian Systems, Inc., its distributor, providing the school with a 400-line Meridian SL-1RT digital private branch exchange valued at $320,000 to replace Golden Gate's current analog PBXs and key systems.

Northern Telecom is also providing a 25-line Meridian SL-1ST digital PBX — valued at $55,000 — for use in the lab, $10,000 worth of manpower to install the two new switches, 16 central office-based ISDN lines valued at $42,000, and a $35,000 direct cash grant.

AT&T lands fast food biz. AT&T has landed a three-year contract with Pepsico, Inc. to provide long-distance service to pay telephones at the company's 13,700 Kentucky Fried Chicken, Taco Bell and Pizza Hut restaurants nationwide. Under the contract, which could be worth $32 million depending on restaurant participation, AT&T will provide 24-hour-a-day operator services for credit card, collect and bill-to-third-party calls.

CONTENTS

Industry Update
Carriers travel tough road in EDI market. **5**
Report: VANs must focus on E-mail integration. **5**
Telecommunications
Centrex group wants to increase its clout. **7**
AT&T enlists help in Tariff 12 billing woes. **7**
Data Communications
Backbone supports SNA and LAN traffic. **9**
Financial services provider hands MCI $15m deal. **9**
Local Networking
Factory net smooths production process. **11**
NetFRAME bolsters line with mid-range superservers. **11**
Management Strategies
Johnson & Johnson develops CIM guide. **13**
International
Exec offers advice on European nets. **15**
New TelMex management bodes well for users. **15**
Products & Services
Software enhances Sun-Net Manager tool. **17**
Control module regulates TCP/IP, X.25 access to MVS. **17**
PopNet lets VINES users hot-key into net utilities. **17**
Opinions
Looking back on life in the far-off land of GEdney. **18**
The year ahead: changes and challenges. **19**
Features
Curtain rising on new technologies. **20**
Action Center **24**
Resource Directory **27**

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State Dept. changes stance on int'l switched services

FCC now decides on fate of INTELSAT monopoly.

By Barton Crockett
Senior Editor

WASHINGTON, D.C. — The U.S. Department of State has ended its long-standing opposition to the sale of international switched services by private satellite operators, a move that should increase competition in the international satellite market.

The decision is expected to clear the way for Federal Communications Commission approval of petitions by private satellite operators to provide analog or digital international switched circuits to users or carriers.

This, in turn, will lessen the International Telecommunications Satellite Organization's dominance over the international satellite services market.

INTELSAT currently holds a monopoly over the provision of international switched services to carriers. These services represent more than 70% of the group's revenues.

Private satellite companies have complained that INTELSAT's monopoly keeps them out of a lucrative market and restricts their ability to serve users.

For example, INTELSAT's monopoly makes it illegal for Alpha Lyracom Pan American Satellite Corp. (Panamsat) to offer users private networks that receive public net traffic on one end of a private line and dump it back into the public network on the other end.

The Russian connection

The end of the INTELSAT monopoly was signaled in a letter that the State Department sent to the FCC on Dec. 14. In that letter, the department said it would not object if AT&T used the Soviet Union's Intersputnik satellite system to support as many as 100 international switched circuits into that country.

In May 1990, the State Department had opposed an AT&T petition to offer the links on the grounds that the use of Intersputnik facilities would represent unwarranted competition and would violate INTELSAT policies. But in November, INTELSAT said it no longer needed a monopoly over switched services ("INTELSAT reforms to ease competition," *NW,* Nov. 12).

Since INTELSAT is a treaty organization, it was required to change its own policies before the State Department could change its stance.

Daniel Clare, director of diplomatic and public initiatives with the State Department's Bureau of International Communications and Information Policy, said the December letter can be interpreted as a general statement that the department no longer objects to individual private satellite operators providing as many as 100 international switched circuits each.

Industry observers said that since the State Department posed the only real roadblock to FCC approval of the AT&T request, that step shouldn't be far off. Observers also said it is likely that the FCC will now approve a Panamsat petition to provide a total of 100 international switched circuits to Eastern Europe and the Dominican Republic.

Several industry insiders added that letting private satellite operators provide 100 circuits moves the U.S. one step closer to eliminating all restrictions on the sale of international switched services by private satellite operators.

"What this tells people is that the walls are crumbling," said Timothy Logue, space and telecommunications analyst with the Washington, D.C. law firm Reid & Priest.

In a petition filed with the FCC, Panamsat had already asked that all restrictions on the supply of international switched services by private satellite operators be dropped.

More capacity

Users are expected to benefit because private firms will bring facilities to countries that need them. For example, the 100 Intersputnik circuits will more than double the number of switched lines AT&T can support to Russia, according to Charlie Meyers, AT&T's manager of international policy.

Henry Goldberg, a partner in Washington, D.C. law firm Goldberg & Spector, which represents Panamsat, said that Panamsat hopes to use its 100 circuits to help Eastern European countries that desperately need new facilities.

He added that Panamsat also plans to sell switched services to a company called Telecomunicaciones de Voz Data y Video (Tricom) in the Dominican Republic. Tricom is planning to use the circuits to support a teleport in which U.S. companies will set up telemarketing and reservation systems that customers in the U.S. can access via international toll-free numbers.

PSC grants N.Y. Tel fraction of $832m rate hike request

By Ellen Messmer
Washington Correspondent

ALBANY, N.Y. — The New York State Public Service Commission (PSC) last week rejected New York Telephone Co.'s request for an $832 million rate hike instead granting the carrier $250 million in rate increases.

Consumer groups expressed outrage that the PSC disregarded the advice of its own panel of administrative law judges to limit the increase to $23.6 million. The New York Consumer Protection Board may, in fact, challenge the PSC decision.

New York Telephone was also disappointed by the decision and issued a statement hinting that its network modernization plans may be curtailed because the PSC failed to grant its rate demands.

Calling itself "one of the lowest earning telephone companies in America," New York Telephone said, "We need reasonable earnings if we are going to continue to modernize New York's telecommunications network."

The carrier went on to say: "New York must have a modern telecommunications network to retain its position as the telecommunications capital of the world. Only then can we help provide the means for a healthy economy, with all the jobs and tax revenues that entails."

A New York Telephone spokeswoman said the carrier would not be able to detail how the lower rate increase would affect plant modernization until the PSC issues the actual written order specifying how the rate hike will be distributed. Last week's regulatory decision, issued verbally, is subject to refinement in the written order to follow.

But the decision to enact any rate increase was made possible by the PSC's decision last November to isolate as a separate proceeding the investigation of dealings among New York Telephone and its subsidiaries, notably Materiel Enterprises Co. (MECO).

The rate case proceeding had been caught up in allegations of finanical wrongdoing between New York Telephone and MECO. Nynex Corp., parent company of New York Telephone, last October merged MECO into the newly formed Telesector Resources Group.

But the PSC noted in its verbal decision that if it should find financial wrongdoing in its ongoing investigation, the $250 million rate increase granted last week could be reduced.

New York Attorney General Robert Abrams applauded the decision to initiate an investigation and vowed to actively participate.

AT&T signs two Tariff 12 deals, despite long delays

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — AT&T has sold new Tariff 15 deals to State Street Bank & Trust Co. and Kentucky Christian College, despite acknowledging that it probably won't be able to deliver service to the users for as many as eight months.

The Federal Communications Commission has examined the legality of AT&T's controversial Tariff 15 deals several times but has yet to rule on the legality of the offers. In every case so far, the FCC has suspended the deals for the maximum time allowed and then let them take effect — but without official blessing.

The tack the FCC seems to be taking is to spend the maximum eight months to decide on Tariff 15 deals, said Stubb Estey, director of AT&T's federal regulatory division.

Estey acknowledged that some customers aren't willing to wait that long for service but that others can wait to receive discounts. AT&T plans to continue filing Tariff 15 deals. "We're not in any kind of a holding pattern," Estey said.

Under its recently filed Tariff 15 deal, State Street Bank in Boston will receive a 13.9% discount

(continued on page 29)

OfficeVision delay blamed on change in OS/2 support

IBM declines to give new availability date but says it will provide a status report in 2Q 1991.

By Jim Brown
Senior Editor

WHITE PLAINS, N.Y. — IBM last week said it will delay availability of its next LAN-based version of OfficeVision and will not ship OfficeVision support for host-attached OS/2 microcomputers early next year as had been promised.

IBM is blaming the delays on the need to revamp OfficeVision to support Personal System/2s running OS/2 Extended Edition 1.3. The company had been developing support for OS/2 Extended Edition 1.2, a product IBM says it will abandon after June.

The first releases of host-based versions of OfficeVision do not support OS/2 Extended Edition microcomputers, while IBM's initial release of the LAN-based OfficeVision only supports OS/2 Extended Edition 1.1.

IBM also said it wants to reduce the disk storage and memory requirements needed to run host-based versions of OfficeVision supporting directly attached OS/2-based microcomputers. It also wants to add features requested by users that tested an early version of the package.

IBM declined to provide revised availability dates for the software but said it will provide users with a status report in the second quarter of 1991.

OfficeVision is a set of cooperative processing products that will enable applications running on IBM's architecturally distinct processors to work together.

The announcement means that versions of OfficeVision/MVS running on MVS-based hosts, OfficeVision/VM running on VM-based hosts and OfficeVision/400 running on Application System/400 minicomputers are shipping without a key module that would enable the various hosts to support directly attached OS/2-based microcomputers.

Furthermore, IBM said it will miss the shipment date for the second release of OfficeVision/2 LAN Series, which will run under IBM's LAN Server network operating system and connect local-area networks of DOS- and OS/2-based microcomputers to IBM's larger systems.

Because the second release of OfficeVision/2 LAN Series is being delayed, IBM last week said it will provide an upgraded version of the current release that will provide some advanced features promised in Version 2.

The company also dropped the price of the first release from $750 to $375 per client until April and said current users will receive free upgrades.

Corrections: The telephone number for Lafferty Publications, Ltd. listed in the story "Security lagging behind technology, report finds," (*NW,* Dec. 10) was incorrect. The correct number is 353-1-718022.

The Dec. 10 Buyer's Guide on EDI services incorrectly listed the telephone number of Kleinschmidt, Inc. The correct number is (708) 945-1000.

Also in the Dec. 10 issue, the story "US Sprint preps upgraded Insite net mgmt. system" carried the wrong byline. The story was written by Senior Editor Bob Wallace.

3Com plan clouded by confusion

continued from page 1

confusion over 3Com's 3+Open strategy.

"We're very concerned about what's going to happen," said Bob Saur, information systems manager at Index Technology Corp. in Cambridge, Mass., a 3+Open user. "It looks like we may wind up having to deal with two vendors where we are dealing with one now."

Another 3+Open user, who requested anonymity, also expressed confusion. "If they are going to continue to allow LAN Manager to run on their servers, then I would think that they are going to have to sell it one way or another," he said.

Most observers believe 3Com plans to continue to support current 3+Open customers. But the company could leave development and support for future versions of LAN Manager in the hands of Microsoft.

It is also expected that 3Com will license to Microsoft the rights for value-added LAN Manager offerings for Macintosh, NetWare and Transmission Control Protocol/Internet Protocol connectivity that were developed by 3Com.

Bob Gill, an analyst at Gartner Group, Inc., a Stamford, Conn., market research firm, said he expects 3Com to make an announcement in January clarifying its net operating system strategy, as well as its terms and licensing agreements with Microsoft.

"3Com is basically going to resell Microsoft's LAN Manager 2.0 and future versions without developing the [extensions] it made to the early versions of 3+Open," he said. It is likely that 3Com will try to off-load most software support to Microsoft, which is investing heavily in setting up a network support organization.

"Fundamentally, 3Com has been trying to wind up its direct involvement in core development for many months, and any agreement with Microsoft would entail doing precisely that," said Alice Bradie, a principal at Hambrecht & Quist, Inc., a New York investment firm. "Their intent is to provide the value-added software connectivity," not the net operating systems.

While 3Com officials declined to comment on what one company described as "ongoing talks with Microsoft," they stressed that the company will continue to support LAN Manager.

"We're planning to support LAN Manager 2.0 on our 3Server 500, for example," said Jeff Thermond, director of marketing for 3Com's Distributed Systems Division. "We'd have quite a few upset engineers if we told them we weren't going to do that."

In an effort to ease user concerns, 3Com officials also have set up meetings with some customers in recent weeks, according to several network managers.

Bruce Backa, executive vice-president at Valinore, Inc., a Manchester, N.H., systems integrator

(continued on page 29)

Microsoft boosts LAN Manager

continued from page 1

intentions to provide multiprocessor support ("LAN vendors mount drive to support multiprocessing," *NW,* Dec. 10).

"This represents a new level of sophistication in network operating system software and one that is ideally designed to support users' client/server applications," Thacher said. "In a resource-sharing environment, the server is almost dumb. But when you move to client/server, you need a machine where some shared processing goes on. That's what we're addressing."

Mike Murray, general manager of Microsoft's network business unit, added that the new software provides "excellent price/performance value for [users] downsizing applications."

LAN Manager, coupled with the Multiprocessor Server Pak, will let a net manager support up to 50% more workstations on a server without any performance degradation, Microsoft said.

Microsoft's Multiprocessor Server Pak announcement follows by three months Banyan Systems, Inc.'s introduction of VINES SMP, a version of the firm's net operating system that supports the symmetrical operation of multiple processors in 80386- and 80486-based file servers ("Banyan offers potent new release of VINES," *NW,* Sept. 17).

As is the case with Banyan's VINES SMP, the first implementation of LAN Manager with multiprocessor support is for Compaq Computer, Inc.'s SystemPro. Compaq, which once considered becoming a LAN Manager OEM, jointly developed the add-on software with Microsoft.

Microsoft will enable other multiprocessor server vendors to adapt the software for their platforms, Thacher said. Apricot Computers, Ltd. and Tricord Systems, Inc. are among the first to commit to supporting multiprocessor LAN Manager, he added.

Microsoft has worked with Parallan Computer, Inc. to provide multiprocessing enhancements to LAN Manager for Parallan's Server 290 hyperserver.

Microsoft will also make the Multiprocessor Server Pak available to LAN Manager OEMs such as Ungermann-Bass, Inc. and 3Com Corp. for sale with their LAN Manager offerings.

Novell, Inc. does not sell a multiprocessor version of NetWare and declined to say when it will. However, it has demonstrated a multiprocessor version of NetWare 386 on Compaq's SystemPro.

"There's a real need for software that can take advantage of multiprocessor systems," said Mike Harrison, a network analyst at Star Enterprise, a 3Com 3+Open user in Houston. "Users are always looking for better throughput, and that's the promise of multiprocessor systems and software."

Randy Lee, senior systems specialist with System One Airplan Services in Roseville, Minn., a LAN Manager 2.0 user, said he's been waiting for a multiprocessor version of LAN Manager.

"I'm glad to see it's out," Lee said. "I look forward to taking a closer look at it when it is available on other vendors' platforms, such as the IBM PS/2, since we don't use Compaq."

Lee said he is also looking forward to running applications such as data base management systems simultaneously with LAN Manager on dual-processor servers. But he would have preferred that Microsoft deliver a symmetrical processing version.

"With [asymmetrical], you have to run specific things on the second processor," Lee said. "It could be that the second processor is just sitting there idle, whereas if it were symmetrical, it could be doing other work."

Others argued that support for symmetrical processing may not be much of an advantage.

"Asymmetrical is less complex than tightly coupled symmetrical," said John Dunkle, vice-president at WorkGroup Technologies, Inc., a Durham, N.H., consultancy. "Most of the server architectures out there are asymmetrical anyway."

Under symmetrical multiprocessing, every processor in a server can perform every computational task, rather than being devoted to specific tasks.

"It's hard to tell without having done any testing just how cost-effective this offering will be," said Craig Burton, chief executive officer of Clarke Burton Corp., a Salt Lake City analysis and consulting firm. "I'm not convinced that running LAN Manager on a multiprocessor system would be more cost-effective than running it on a 486 machine or buying two 386 machines."

But the LAN Manager plan would be more cost-effective, said Mark Cuban, president of MicroSolutions, Inc., a nationwide systems integrator in Dallas that resells LAN Manager, Novell NetWare and Banyan local-area network products. He said multiprocessor support will enable LANs to support more users, making them a more practical platform for downsized applications.

LAN Manager Multiprocessor Server Pak is available through Microsoft's authorized net specialists. It costs $2,495.

Vendors test interoperability

continued from page 2

supporting the transfer of data among different router brands.

RIP is a network-layer protocol used to maintain and update routing tables and relay updated routing information in the event of a link failure. RIP routing decisions are based on the number of hops between end points; the fewer the hops, the better. It does not take into account line speeds and tariff data.

> "RIP is definitely on the way out. Users of large nets are looking for something else," said Network Strategies' Eric Andrews.
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> ▲▲▲

OSPF, by contrast, is designed to overcome these limitations. The protocol enables a router to determine the least expensive route for network traffic. There is also no practical limit to the number of interconnected networks routers can support, whereas RIP can only accommodate as many as 16 hops between routers.

In addition, OSPF provides a routing security method for the network manager who wishes to isolate a portion of the network as an autonomous system. OSPF allows users to divide the network into a series of domains, or autonomous systems, consisting of intra-area routes, interarea routes or external routing information, which protects areas from receiving routing information from other areas on the net.

"When routers exchange OSPF traffic, they have to identify themselves," said John Moy, the senior staff engineer at Proteon who authored the original OSPF specification. "Authentication is built into the protocol. You have to give routers permission to join the network."

OSPF also requires less routing overhead — the bandwidth consumed in routing traffic — than RIP. While RIP routers have to send routing table updates to other routers across the network every 30 seconds, OSPF routers only send them every 30 minutes, unless there is a change on the network, which it would update immediately. By reducing routing table updates, more bandwidth is available to users.

"RIP is definitely on the way out. Users of large networks are looking for something else," said announcement attendee Eric Andrews, an analyst with Network Strategies, a network consulting practice of Ernst & Young. "I imagine OSPF will be the protocol of choice for TCP/IP nets."

David O'Leary, network operations manager of Southeastern Universities' Research Association Network (SURANET), a 100-site regional network serving 37 academic organizations, said OSPF would meet SURANET's needs for the foreseeable future.

"The biggest advantage we see is the bandwidth conservation and protocol overhead associated with OSPF," he said.

The OSPF interoperability testing was conducted at a SURANET site located at the University of Maryland here. SURANET is one of the regional networks of the National Science Foundation's large TCP/IP research net, NSFNET.

During the tests, each vendor ran OSPF Version 2, which was developed by the Internet Engineering Task Force OSPF Working Group. Internet is a nationwide network linking government, academic and commercial users.

ACC and Wellfleet said they plan to eventually provide translation services so existing RIP and OSPF routers can exchange data. Proteon said it has already devised an OSPF implementation that supports the exchange of data between OSPF and RIP routers. But the capability for RIP-OSPF data exchange, which falls outside the purview of the standard, will be determined by each vendor's proprietary approach.

> "The biggest advantage we see is the bandwidth conservation and protocol overhead associated with OSPF," O'Leary said.
>
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3Com would not comment on its plans.

Absent but committed

One vendor noticeably absent from last week's announcement was cisco Systems, Inc. A spokesman for the company said cisco Systems' multiprotocol router, which supports the company's proprietary Integrated Gateway Routing Protocol, does not face the large-network shortcomings of the RIP-based routers.

Nevertheless, he said cisco Systems is working to support OSPF.

"We were waiting for the stabilization of the OSTP standard, which we now see," the spokesman said. "Interoperability tests are a good indication that it's stabilizing."

Cisco Systems is planning to begin beta tests on an OSPF router soon and will ship it in the second quarter of 1991.

Worth Noting

> "Banyan [Systems, Inc.] has recently experienced high management turnover. While this problem has stabilized, Banyan must present a consistent corporate focus and marketing effort to its customers and prospects."
>
> **Lee Doyle**
> Analyst
> International Data Corp.
> Framingham, Mass.

People & Positions

Vitalink Communications Corp., a Fremont, Calif., manufacturer of internetworking products, last week announced that it has appointed three new vice-presidents in addition to promoting a current vice-president to a newly created position.

Tony Banta, previously acting vice-president of manufacturing and service at the company, has been appointed vice-president of manufacturing and service on a permanent basis.

Banta, who has been with Vitalink for six years, was assistant vice-president of manufacturing before being appointed acting vice-president of manufacturing and service recently.

Art Klein has been named vice-president of sales. Previously, he was acting vice-president of sales.

Maureen Lawrence has been named vice-president of marketing. Previously, she was assistant vice-president of product marketing.

Lawrence replaces **Paul Schaller,** who has been appointed to the newly created position of vice-president of Vitalink's Digital Program.

As vice-president of the Digital Program, Schaller will focus on managing Vitalink's strategic business relationship with Digital Equipment Corp.

Report: VANs must focus on LAN E-mail integration

Proprietary E-mail links present growth prospects.

By Ellen Messmer
Washington Correspondent

FRAMINGHAM, Mass. — A new report warns value-added network (VAN) service providers that as users increase their reliance on internal electronic mail systems, vendors must provide services that interconnect the disparate user networks.

The transmission of messages between private E-mail services presents the greatest growth prospects for VANs, according to "The Evolving VAN E-Mail Market," a report by International Data Corp. (IDC), based here.

"As E-mail systems continue to migrate off mainframes and minicomputers, LAN-based E-mail has accelerated rapidly," the report said. "The challenge for VANs, therefore, is to provide LAN E-mail users with international messaging capabilities that are as easy to use as interoffice systems."

VANs have traditionally offered store-and-forward mail services in which users send and receive messages via private E-mail boxes on the public net.

But, the report said, the future for VANs lies not in mailbox sales, but in providing interconnection services based on the X.400 messaging protocol to link disparate private LAN E-mail systems.

The IDC report points out that the VANs that develop systems integration skills to link private E-mail systems, as well as the ones that strike a number of E-mail interconnection agreements with foreign carriers, are likely to attract the most customers.

Bill Wolfe, Infonet Services Corp.'s director of product management for enhanced services, agreed that customer demand to link private E-mail systems is skyrocketing.

"We're seeing two converging forces. One is the international information systems director who's seen the proliferation of LAN systems that have been implemented without his control," Wolfe said. "The second is the individual user at the LAN who is facing the requirement for international interconnection."

The report also singled out US Sprint Communications Co., noting that the carrier has aggressively pursued interconnection agreements with international E-mail service providers to hook up to its SprintMail network.

(continued on page 6)

INDUSTRY BRIEFS

Apple licenses technology to Farallon. Apple Computer, Inc. and Farallon Computing, Inc. last week signed an agreement under which Farallon will license AppleTalk technology that it will use to develop new products. Farallon plans to develop and market AppleTalk-based products for Microsoft Corp.'s DOS and Windows 3.0 platforms under the Farallon PhoneNet System name. Farallon's first products based on the technology will be available in the first quarter of 1991.

AT&T, Ricoh sign comarketing pact. AT&T and the U.S. subsidiary of Ricoh Corp. of Japan last week announced the signing of a one-year comarketing agreement covering AT&T's Accunet Switched Digital Services and Ricoh's FAX7000D Group IV facsimile machine. The agreement calls for the two companies to share sales leads and to recommend each other's service and equipment in their follow-up sales activities. Also, AT&T and Ricoh will use each other's services and equipment to conduct demonstrations for customers.

Mitel announces voluntary resignation plan. Mitel Corp., a Kanata, Ontario, maker of private branch exchanges and other telecommunications equipment, last week announced that it has implemented a voluntary resignation program open to its 4,100 employees worldwide. The program is an effort by the company to reduce expenditures in response to the economic downturn now affecting the company. The program gives employees the option of resigning with a full termination package or taking a leave of absence without pay for a period of one to two years for the purpose of continuing education, for example. The program will last until Feb. 1.

Big Three carriers' EDI offerings

Carrier	AT&T	MCI	US Sprint
Product	AT&T EDI	MCI EDI 400	SprintEDI (formerly Telenet EDI)
Date offered	October 1988	December 1990	November 1987
EDI partners	•ACS/Premenos •APL Group, Inc. •EDI, Inc. •EDI Solutions •Release Management Systems •St. Paul Software, Inc. •Supply Tech, Inc. •TranSettlements, Inc.	•Digital Equipment Corp. •Supply Tech	•EDI, Inc. •Harbinger*EDI Services, Inc.

SOURCE: AT&T, BASKING RIDGE, N.J., MCI COMMUNICATIONS CORP., WASHINGTON, D.C., US SPRINT COMMUNICATIONS CO., RESTON, VA.
GRAPHIC BY SUSAN J. CHAMPENY

Carriers travel tough road in EDI market

MCI's entry into the electronic data interchange market underscores pros, cons of carrier services.

By Bob Brown
Senior Editor

MCI Communications Corp.'s foray into the electronic data interchange services market earlier this month brings to light the pros and cons of buying EDI services from long-haul carriers, industry observers said.

Carriers that offer EDI services pitch the reliability of their networks, pricing and ability to offer one-stop shopping for services as key pluses to prospective clients.

But EDI service providers lack expertise at providing value-added services such as training and support offered by companies such as GE Information Services and Sterling Software, Inc.'s Ordernet Services Division — services that many users consider crucial to persuading trading partners to support EDI.

The general lack of training expertise available from carriers that offer EDI services is enough to scare off some potential customers.

"We went with Ordernet to get guidance and experience," said Scott Wingo, corporate systems development manager at Allergan, Inc. in Irvine, Calif. "Had we been using EDI for years, we might have gone with a long-distance carrier" in search of a better price or to buy EDI services and other network services from the same company, he added.

Carriers will develop training and support services over time, industry analysts said, but in the short term, carrier-based EDI will appeal only to their installed base of customers.

As users gain experience with EDI, however, they may seek out carrier-based offerings as a less inexpensive service alternative.

MCI announced its X.400-based MCI EDI 400 service at the Electronic Data Interchange Association's 22nd National Conference in Washington, D.C. ("MCI unveils X.400-based EDI service," *NW*, Dec. 10). In doing so, it was the last of the Big Three carriers to enter the EDI market (see graphic, this page).

Observers said MCI's comparatively late entry into the fast-growing EDI market shouldn't hurt its chances. Neither AT&T nor US Sprint has made much of a run at market leaders GEIS or Ordernet.

> "We went with Ordernet to get guidance and experience."

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According to Susie Houck, MCI's EDI marketing manager, MCI has been monitoring the EDI market for some time. A recent uptick in customer demand for X.400-based services prompted the carrier to join the market, she said.

But industry observers questioned whether MCI and its long-haul rivals will achieve success, at least in the near term, in attracting customers to sign up for their EDI services.

On one hand, AT&T EDI Business Manager Gary Dalton described EDI as a perfect fit with the company's information movement and management

(continued on page 6)

Carriers travel tough road in EDI market

continued from page 5

strategy. On the other hand, observers said EDI is just one of many service offerings in a whole suite of long-haul carrier network services.

By contrast, other EDI service providers, such as Ordernet and GEIS, rely on EDI services as a major business.

"We see minimal impact from the long-distance carriers on the market at this point,'' said Brian Dearing, vice-president of marketing at Ordernet in Columbus, Ohio. "They have a carrier philosophy in regard to the market that 'bits is bits' and that it really doesn't matter what the content of the messages is.''

The reason so many users will likely stick with vendors that have made EDI one of their primary focuses is that "EDI is still very much a hand-holding business that requires a substantial amount of support,'' said David Taylor, vice-president of inter-enterprise systems at Gartner Group, Inc., a Stamford, Conn., market research firm.

> "We see minimal impact from the long-distance carriers on the market at this point,'' said Ordernet's Dearing.

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Roberta Wiggins, senior data analyst at The Yankee Group, a market research firm in Boston, agreed that providing support will be the carriers' challenge.

"The bottom line is the level of support they will offer,'' Wiggins said. "It's important not to just give users seminars and long-distance advice'' on how to set up EDI networks and partnerships, she added.

MCI's Houck agreed. MCI plans to offer users customized support by meeting with individual customers to determine what type of support they and their trading partners need, she said.

US Sprint, whose EDI service offering has its roots in the carrier's old Telenet value-added network, has also made efforts to make EDI easier to install and use. Earlier this year, US Sprint announced a plan to offer users turnkey EDI systems including both hardware and software.

Even so, the long-haul carriers lack the experience of longtime EDI players such as GEIS, Ordernet and Kleinschmidt, Inc. in bringing new EDI trading partners onboard, observers said.

The long-haul carriers would be wise to differentiate their services on price, Taylor said.

"We believe that is what is expected of them by large users to compensate for their lack of expertise in helping set up trading partners on EDI networks,'' Taylor said. To not follow this strategy would be a serious mistake, he said.

Both MCI and AT&T said they won't promise the lowest cost service because they don't believe price is a driving factor in the market.

Ordernet's Dearing agreed, noting that transmission costs constitute only about 5% of the price his company charges for its EDI services.

But EDI service providers agreed that price may, over time, become more of a factor. That is, price may be more important once EDI users gain enough EDI expertise in-house that they don't need to rely on third-party vendors for as much support and once the widespread acceptance of standards negates much of the need for translation services by third parties.

Long-haul carrier EDI offerings also promise to become increasingly attractive as more users seek out one-stop shopping arrangements whereby they can bundle multiple network services into a single package for advanced users that want to integrate EDI with other messaging services such as electronic mail and facsimile, Wiggins said.

Where the traditional EDI service providers could get hurt, Taylor said, is in giving away the value-added services that differentiate them from the long-distance carriers. Most of the major EDI service providers give away high-margin services, such as custom personal computer-based EDI software front ends, to win and secure the business of preferred customers, Taylor said. ⧉

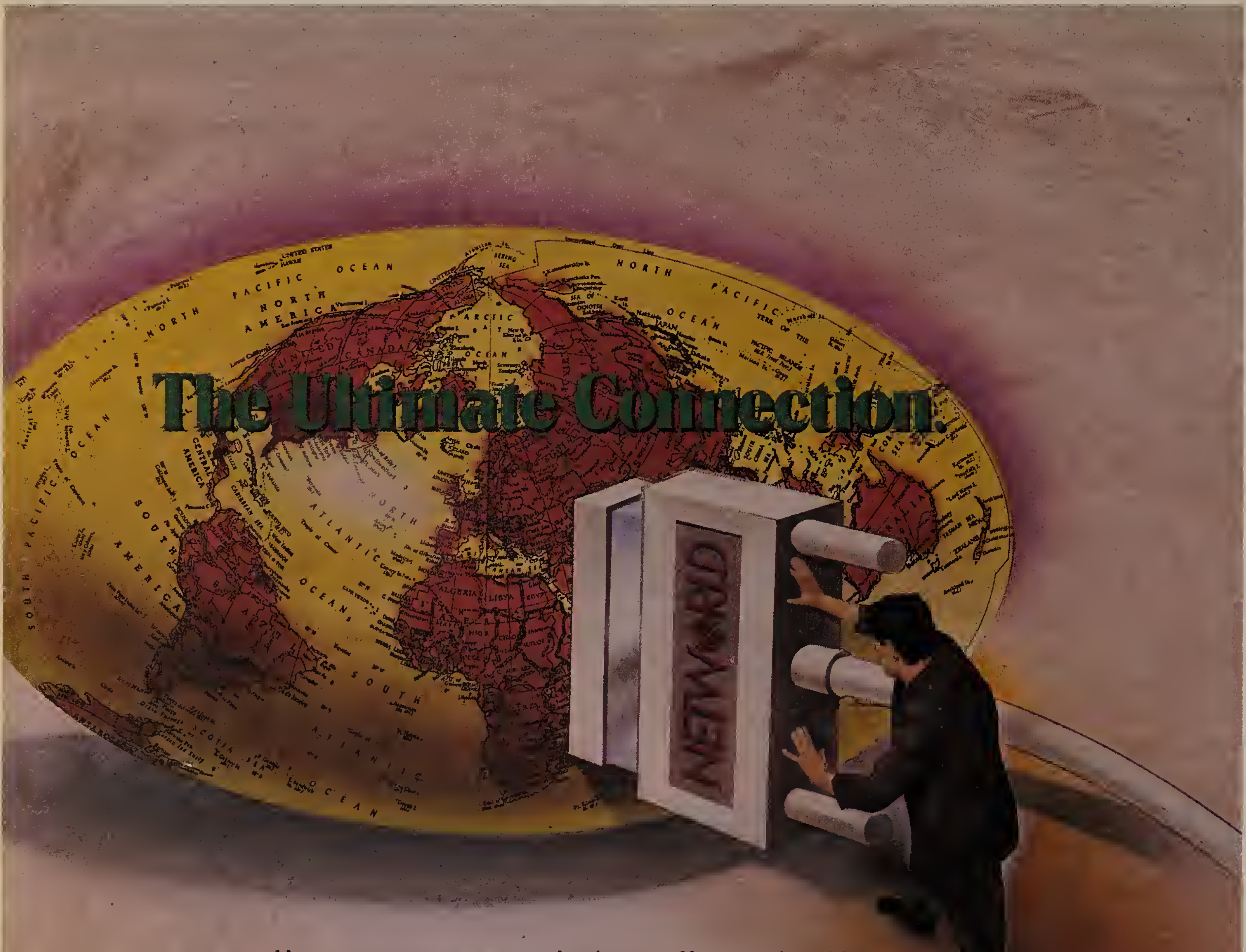
Report: VANs must focus on integration

continued from page 5

Many VANS are also working to establish proprietary and X.400 interfaces to private messaging systems, the report said.

But the customer should demand more, said Don Fisher, vice-president of professional services at Soft-Switch, Inc., the supplier of Soft-Switch Central E-mail integration software.

"Interoperability in and of itself doesn't guarantee everything will work,'' Fisher said. "We certify and warrant the connection for our product to the specific value-added network. We take it on ourselves to ensure that the connection continues to work.'' ⧉



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Worth Noting

Metropolitan Fiber Systems, Inc. (MFS) recently announced that it has completed installation of its 500th data circuit for Quotron Systems, Inc., an equity information services firm. Quotron uses MFS fiber services in Boston, Chicago, Minneapolis, Philadelphia and San Francisco.

Carrier Watch

After grappling with the issue for almost two years, the Federal Communications Commission recently approved a Common Channel Signaling System 7 (CCS7) access service tariff, enabling local and long-distance carriers for the first time to interconnect their out-of-band signaling networks.

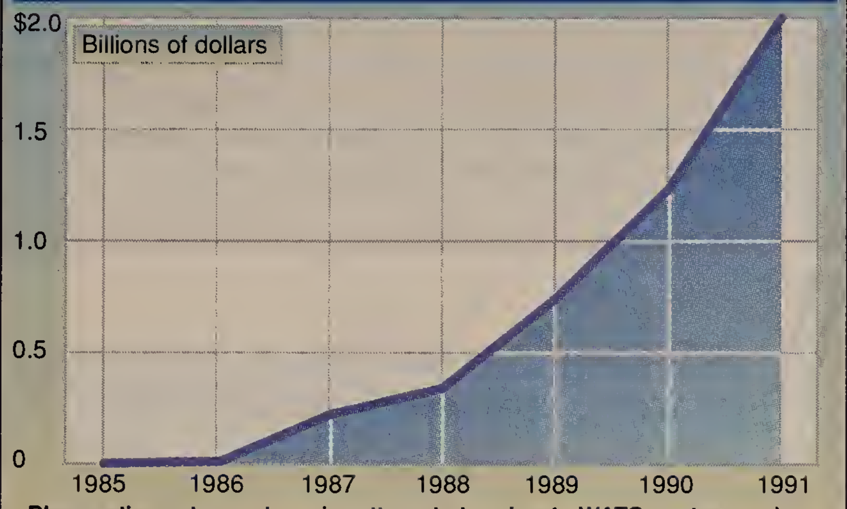
A **BellSouth Corp.** tariff filed on Sept. 14, which offers out-of-band signaling as a free option to Feature Group D service, is the first CCS7 tariff to receive approval from the FCC, while other regional Bell holding companies have faced FCC deferral or rejection.

Don Evans, director of regulatory affairs at MCI Communications Corp., applauded the rate structure of the tariff but criticized the lack of flexibility in BellSouth's CCS7 interconnection requirements, which he wants the FCC to address separately.

MCI went on record as seeking suspension of the BellSouth tariff because BellSouth does not provide CCS7 for Feature Group B in the tariff and users must interconnect through designated signal transfer points rather than through service switching points.

However, Evans noted that the BellSouth filing was the first RBHC CCS7 filing MCI did not ask the FCC to reject and that MCI would soon be signing on for the BellSouth service.

Virtual network service revenue skyrockets



Plummeting rates and carrier attempts to migrate WATS customers have resulted in increased use and revenue growth for virtual net services.

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: THE YANKEE GROUP, BOSTON

AT&T enlists help of CBIS in Tariff 12 billing woes

Firm joins EDS and CSC in billing support effort.

By Daniel Briere
Contributing Editor

AT&T officials have confirmed that the carrier has awarded Cincinnati Bell Information Systems (CBIS) a contract to help develop billing software that will be used to support Tariff 12 customers.

According to AT&T, CBIS joins Electronic Data Systems Corp. (EDS) and Computer Sciences Corp. (CSC) in providing help in Tariff 12 billing.

CBIS will be responsible for software development for all new Tariff 12 contracts, while AT&T will perform the actual billing, according to an AT&T spokesman.

Project under way

AT&T said CBIS is already working on billing systems for several recent Tariff 12 customers. Sources close to the deal said the first AT&T Tariff 12 customers to be converted will be transitioned by next March.

For CBIS, the contract complements a rapidly growing customized billing operation. A CBIS spokesman said the company "already has a number of billing relationships with AT&T for various types of information management."

Although the spokesman declined to specify the nature of those contracts, CBIS' contracts with interexchange carriers typically include customized billing for advanced 800 services, calling card services, cellular long-distance services and international 800 services.

CBIS recently added contracts with MCI Communications Corp., Nippon Telegraph and Telephone Corp. (NTT) and Telecom Australia to its client list. "The contract with NTT covers technical services to automate back office telephone operations for the carrier, including maintenance, billing and other business office functions," the spokesman said.

The NTT contract is scheduled to run through 1992.

CBIS was formed in 1983 with about 200 employees. Since then, it has gone from being a billing vendor to a company that markets and manages information for circuit and Integrated Services Digital Network line provisioning.

Today, CBIS has about 4,000 employees located in 10 cities worldwide and has more than $300 million in revenue.

The AT&T contract with CBIS is one of several changes in billing and provisioning systems undertaken by the carrier in recent months.

AT&T has overhauled its high-end Software-Defined Network billing systems ("AT&T to streamline SDN billing and provisioning," *NW,* Oct. 29) and is nearing the end of its efforts to take back control of all Pro WATS billing from the regional Bell holding companies.

AT&T has been under continual fire for billing errors in its customized Tariff 12 offering.

Industry consultants said they approve of the outside contracts. "That's the only way AT&T is going to get out of these billing problems," said Thomas Walton, president of Walton and Walton Associates, Inc., a communications consulting firm in Richmond, Va.

"It makes damn good sense for AT&T," he said. "Even though it is customized billing, CBIS' experience in that area will give AT&T a big boost, especially as the carrier brings on more Tariff 12 users."

Centrex group wants to increase its clout

Group president intends to boost relations with state regulators, switch makers, other user groups.

Q&A In its four-year history, the National Centrex Users Group (NCUG) has given users a single forum for the discussion of common goals, concerns, victories and defeats.

With this goal attained, the 800-company group is turning its attention to increasing its clout with state regulators as well as central office switch manufacturer and central office switch user groups.

Newly elected NCUG President Lowell Kessler, director of telecommunications engineering for Detroit Edison Co., will spearhead these efforts and look to build bridges where there were none before. Kessler helped found two Centrex user groups: the Michigan Centrex Users Group in 1985 and NCUG in 1987.

Kessler spoke with *Network World* Senior Editor Bob Wallace about a variety of challenges NCUG faces in its efforts to build strong relationships critical to the future of the group.

What is the single most pressing issue facing Centrex users?

It's the issue of user control, and it has two facets. In the small picture, users want to control their desktop destiny, which means having the capability to perform station moves, adds and changes in a timely and cost-effective manner. There's a lot more product out there now than when NCUG started, but we still need more.

In the big picture, users want a louder voice with their state public utilities commission when it comes to rate cases and other proceedings that could change the way the service is regulated.

How does the process of changing an existing Centrex tariff work?

An "intervenor" — a telephone company, a PBX vendor or some other party — asks the state public utilities commission for a change [such as] in the way

(continued on page 8)

WASHINGTON UPDATE

BY ANITA TAFF

ICA questions extent of RBHC study. The International Communications Association (ICA) last week criticized a study commissioned by the regional Bell holding companies earlier this year that indicated a direct link between investment in the telecommunications network and the health of the U.S. economy. The study, conducted by DRI/McGraw Hill, Inc., stated that U.S. corporations saved $65.7 billion in 1982 by increasing their usage of telecommunications services rather than more expensive labor and plant ("Study links telecom to health of economy," *NW,* Nov. 26).

The RBHC study was submitted last month to the Department of Commerce's National Telecommunications and Information Administration (NTIA) as part of that agency's in-depth study of the U.S. telecommunications infrastructure. ICA last week said it agrees with DRI/McGraw Hill's general assertion that increased telecommunications usage has benefited the economy but questions conclusions about the extent of savings to U.S. corporations. RBHC officials acknowledged that they will use the study for further lobbying efforts. But the ICA is apparently fearful that the RBHCs will also use the study to justify investments that the ICA considers excessive, such as fiber to the home.

ICA said that if the RBHCs gamble too heavily on the success of new services supported by the technology, all users could suffer. "The community of ratepayers is being asked to accept the long-run economic merit of massive net modernization outlays and to fund these programs either through higher rates for basic monopoly telecommunications service or by forgoing price decreases that might otherwise result from productivity-enhancing capital investment programs," ICA stated.

Telephone training made easy with humorous film

Video shows staff how to use phone features.

By Mary Ellen Pitz
and Jill Blokhuis
Special to Network World

INSIDER'S VIEW

LA CROSSE, Wis. — Luthern Hospital-La Crosse, like many large businesses, was having difficulty keeping its employees up to date on expanding telephone technology. Staff members were not using existing functions, let alone the new features that were being added periodically.

We had people who would walk across a room or shout to a coworker to pick up a call and others who told callers reaching the wrong department to call back rather than transfer the call.

Clearly, telephone training was badly needed, but only 1½ hours was allocated for training about 30 new employees a month. Current employees had even less time to take refresher classes.

Furthermore, many people resisted telephone training. Some fear the technology, while others were insulted that they needed training in something so commonplace as a telephone. It was obvious that most people were bored by traditional telephone classes.

But we recognized that the telephone represented the entry point — or, if misused, exit point — to our 402-bed medical center and adjacent group practice, Gunderson Clinic.

In a market with increasing competition, we knew something had to be done to improve our telephone training. Our telephone system receives about 1,200 outside calls an hour and supports an untold number of internal calls — about the equivalent traffic for a city of 10,000.

After a brainstorming session with members of our telecommunications and education departments, we came up with an idea to create a humorous and educational video training tape.

After bouncing around a variety of concepts, we decided the video should be a takeoff on the letters that David Letterman reads on his television show, *Late Night with David Letterman.* We developed letters exaggerating common mistakes in telephone usage and dramatized them with hospital employees in a film we called *Late Night with Dave: Adventures with the Telephone.*

The tape, which is used as part of our comprehensive Customer/Service Guest Relations Program, has six vignettes of feature misuse, plus examples of how to correctly use the hold, transfer, conference, call pickup, ring again, redial and call forwarding functions. Half the tape involves use of the Northern Telecom, Inc. Meridian SL-1 multiline telephone; the other half involves using the 2500 Unity-type telephone.

> We had people who would walk across a room or shout to a coworker to pick up a call.
>
> ▲▲▲

We show "Ward" receiving calls from coworkers who did what they were told whenever they left their desks: placed their phones on "call for Ward." We have a worker transfer a call throughout the hospital, dragging a telephone with a long cord down the hall, through the physical plant, out the window, up a ladder, across the roof and finally into the women's bathroom.

We even demonstrate what can occur when a call is not properly placed on hold by having "Dave" overhear coworkers speak of him in not-so-friendly terms while waiting for another person to come to the phone.

These parodies on telephone usage are meant to loosen up the audience so they can listen to the proper use of telephone techniques.

In addition to the half-hour video, we provide each of our employees with a user's manual that is made to fit under the telephone so that it is easily accessible when questions come up.

Not only is it common to hear the training class laugh loudly when the tape is played, evaluations afterward are overwhelmingly positive.

Once we developed *Late Night,* we began getting calls from other businesses with similar training needs that had heard about our video. That led us to make it available to other organizations, along with user and training manuals for those who will do the teaching.

Among the companies that have purchased the video and training manuals is Family Health Plan, a Milwaukee health maintenance organization (HMO) with four offices and 900 employees.

Carole Talkowski, reception supervisor for Family Health Plan, said proper use of the telephone is critical because the HMO encourages its 87,000-patient base to call before coming in for appointments, medical advice or even an emergency.

"If that is one of our principles, we better be able to handle these calls," she said. "This is very much a service-oriented facility. We need to have people using our phones who can communicate with the people who call."

Late Night's strength is that it is both educational and entertaining, Talkowski said. "People don't feel they are preached at or talked down to. It is a very good tool that people on all levels can appreciate," she said. "By making it lighthearted, it reaches a broader audience. People learn better when they enjoy what they see and hear."

Another company using the video is Wincraft, a Winona, Minn., manufacturer of special advertising products. Larry Strittmater, director of quality and corporate communications, said it was critical that the company's 250 to 300 employees be well-versed in both the SL-1 and 2500-type telephone sets without requiring him to spend much time in training.

"We felt that *Late Night with Dave* has done about as well as you can with a telephone instructional video," Strittmater said. "It is a rather boring topic when you think about it, [but] by putting enough humor into the film, they've made it enjoyable."

Mary Ellen Pitz is director of telecommunications at Lutheran Hospital-La Crosse, and Jill Blokhuis is a professional health educator at the hospital.

Group wants to increase clout

continued from page 7

the service is priced or sold. If the PUC sees the need for a change, the formal process begins.

To participate in the process the user has to ante up, which means hiring a lawyer familiar with regulation. Taking part in the process is expensive and time-consuming.

Most users would look at a 5% rate increase, for example, and decide that it's easier to pay the increase rather than go out and pay thousands of dollars to hire a lawyer to fight it. There are no savings there.

The process is set such that the user doesn't have any formal input, although he is the one most affected by the change. There needs to be some way to get your point of view across.

What steps did the Michigan Centrex Users Group (MCUG) take when the state Public Service Commission (PSC) decided to revamp Michigan Bell Telephone Co.'s Centrex tariff?

[The MCUG] had shared information with the commission staff before the recent tariff change.

But once the case was filed, we could no longer continue that relationship unless we wanted to ante up and become part of the process. We read a letter at the hearing stating our view, but it was viewed more as support documentation that didn't influence the decision.

We wrote a letter to the PSC chairman saying that preliminary proposals we see warrant looking out for the general interest of Michigan businesses. That letter was sent back to us with a note saying it couldn't be read during the rate process.

All communications are cut off unless you want to be an intervenor.

Why do state regulators view large users as the enemy?

It's almost a mindset.

The function of the PSC is supposed to protect the general public. But what they don't realize is the general public is impacted by what happens to us.

We at Detroit Edison can't pass on higher telecommunications costs to our customers because we are a regulated utility, but you can bet that if a manufacturer's phone bill goes up, he doesn't eat that increase. It goes back into the product, and the general public pays for it.

What can you do to develop a greater role in these situations?

Our attitude in Michigan has been, and our national approach will be, to provide education so [state regulators] can become better decision makers. What we did before [a recent Centrex change] hit the table was to share information. We don't want our relationship to be adversarial.

What can you do on an ongoing basis to get a louder voice and build a stronger relationship with regulators?

The first thing you have to do is show them you aren't the enemy. You have to overcome that attitude; otherwise, you can't even get in to speak with them.

You have to convince the regulators that you're on their side.

We tell them we want to help them make better decisions. It's not the phone company or the phone company speaking through some individuals. These are people that use the services.

Do most Centrex users look on state regulators as friend or foe?

Our PSC staff came to one of our meetings once and said they appreciated the opportunity to talk to businesses. We're not criticizing the decision makers. We're just criticizing the information they use to make the decisions.

Switching to a different topic, what can you do to effect service development and deployment?

We are creating a [local exchange carrier advisory board] for the NCUG. We will meet quarterly with the LECs, as well as hold a couple of conference calls and a couple of face-to-face conversations per month. It'd be a forum where users could say, "Let's close the gap between what your switch manufacturer offers and what you offer us."

Our first conference call is scheduled for Jan. 22, and our first face-to-face meeting will be in Minneapolis in March. Right now, the only chance we have to hit them with questions is at the LEC panel at the [annual conference].

What plans do you have to influence central office switch development efforts?

We're working to develop meaningful relationships with AT&T [Network Systems Group] and Northern Telecom [Inc.] and with their [central office switch] user groups. We've made great headway with [the 5ESS user group] to the extent that they are seriously considering having one of their semiannual meetings at our conference next year.

We hope to do the same with the [Northern Telecom] DMS-100 Users Group. This will give us more clout with switch manufacturers. By going through their customers and directly to them, we can have much more influence than we have now.

What other relationships is the NCUG building?

We were contacted by Bellcore after our recent annual conference and asked to speak at their industry forums to explain what users want from switch vendors. We've had conversations with them, sent them a copy of our [Centrex satisfaction survey] and are due to talk more.

How will the NCUG change in the near term?

Until now, it's been our goal to bring people together and give them the opportunity to interact. We've found, though, that users need more. We're developing better educational programs and working harder to establish credibility with the RBHCs. We've been loosely affiliated. One of my jobs is to add more structure to the organization. We have objectives and mission statements, and strategies and action plans to accomplish them.

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C. Please Answer ALL Questions, Sign & Date the Form.

1 Industry: (check one only)

01. ☐ Manufacturers (other than computer/communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
08. ☐ Retail/Wholesale Trade
09. ☐ Transportation
10. ☐ Utilities
11. ☐ Education
12. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
13. ☐ Government State/Local
14. ☐ Government Federal
15. ☐ Military
16. ☐ Aerospace
17. ☐ Consultants (independent)
18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/Systems House
22. ☐ Distributor, Computer Related
23. ☐ Distributor, Communications Related
24. ☐ Other ____________________

2 Job function: (check one only)

1. ☐ Networking Management (Responsible for both voice & data)
2. ☐ MIS Management (VP, Dir., Department Head)
3. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
4. ☐ Data Communications Management (Responsible for data only)
5. ☐ Telecommunications Management (Responsible for voice only)
6. ☐ Financial Management
7. ☐ Engineering Management
8. ☐ Consultant (Independent)
9. ☐ Other ____________________

3 What is the scope of your involvement in purchase decisions for Network/ Communications products + services? (check one only)

1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
2. ☐ Multi Enterprise (Consultants)
3. ☐ Department Wide

4 What is the total number of sites for which you have purchase influence?

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1

5 Your primary responsibility: (check one only)

1. ☐ Both Data + Voice
2. ☐ Data Networking Only
3. ☐ Voice Networking Only
4. ☐ None

6 Which transmission media do you use in your network: (check all that apply)

Public:
01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
02. ☐ Leased Line (not including T-1)
03. ☐ T-1
04. ☐ Fractional T-1
05. ☐ T-3/SONET
06. ☐ Broadband
07. ☐ ISDN

Private:
08. ☐ Satellite
09. ☐ Microwave
10. ☐ Fiber Optic

7 Is your network: (check all that apply)

LOCAL AREA NETWORK
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

8 What is your network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ TCP/IP
7. ☐ DCA (UNISYS)
8. ☐ OTHER ____________

9 What is your LAN Operating System? (check all that apply)

01. ☐ 3COM (3+, 3+open)
02. ☐ LOCAL TALK (APPLETALK)
03. ☐ BANYAN (VINES)
04. ☐ DCA (IRMALAN)
05. ☐ IBM (LAN Server)
06. ☐ IBM (PC LAN PROGRAM)
07. ☐ MICROSOFT (LAN MANAGER)
08. ☐ UNGERMAN BASS (NET/1)
09. ☐ NOVELL (NETWARE)
10. ☐ TOPS
11. ☐ PROTEON (PRONET)
12. ☐ OTHER ____________________

10 What is your LAN environment? (check all that apply)

1. ☐ 4M TOKEN RING
2. ☐ 16M TOKEN RING
3. ☐ ARCNET
4. ☐ ETHERNET
5. ☐ STARLAN
6. ☐ FDDI
7. ☐ LOCALTALK
8. ☐ OTHER ______

11 Which operating systems do you utilize? (check all that apply)

1. ☐ IBM DOS (VSE)
2. ☐ UNIX
3. ☐ OS/2
4. ☐ OS/2 Extended Edition
5. ☐ MVS
6. ☐ VM
7. ☐ VMS
8. ☐ XENIX
9. ☐ PICK
0. ☐ OTHER ______

12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. BULL HN IS		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

13 Please indicate by vendor the number of microcomputers/workstations:

A. Presently installed in your network.
B. The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. PCs based on 80286 chip		
02. PCs based on 80386 chip		
03. PCs based on 80486 chip		
04. 8086/8088		
05. Macintosh		
06. RISC-based workstations		
07. UNIX-based workstations		

14 What is your planned PC standard? (check all that apply)

1. ☐ EISA
2. ☐ MCA
3. ☐ NUBUS (MACINTOSH)

15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

16 Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:

B) I plan to purchase the following products/ services in the next 12 months:

Presently Involved A	Plan to Purchase B	
A	B	LOCAL AREA NETWORKS:
01. ☐	☐	Local Area Networks
02. ☐	☐	LAN Servers
03. ☐	☐	LAN Services
04. ☐	☐	Cables, Connectors, Baluns
05. ☐	☐	Bridges, Routers, Gateways
06. ☐	☐	UPS
07. ☐	☐	LAN Storage Devices
A	B	COMPUTERS/PERIPHERALS:
08. ☐	☐	Micros
09. ☐	☐	Minis
10. ☐	☐	Mainframes
11. ☐	☐	Front End Processors
12. ☐	☐	Terminals
13. ☐	☐	Laptops
14. ☐	☐	Printers
15. ☐	☐	Work Stations
16. ☐	☐	Cluster Controllers

(continued on next column)

Presently Involved A	Plan to Purchase B	
A	B	SOFTWARE:
17. ☐	☐	Network Management
18. ☐	☐	Micro to Mainframe
19. ☐	☐	Network Security
20. ☐	☐	Call Accounting
21. ☐	☐	Distributed DBMS
22. ☐	☐	Communications Software
23. ☐	☐	Applications Software
24. ☐	☐	Network Operating Systems Software
25. ☐	☐	EDI Software
26. ☐	☐	E-Mail Software
A	B	DATA COMMUNICATIONS:
27. ☐	☐	Modems (over 9.6kbps)
28. ☐	☐	Modems (under 9.6kbps)
29. ☐	☐	T-1 Multiplexers
30. ☐	☐	T-3 Multiplexers
31. ☐	☐	Fractional T-1 Multiplexers
32. ☐	☐	Data Switches
33. ☐	☐	Matrix Switches
34. ☐	☐	Packet Switches
35. ☐	☐	Protocol Converters
36. ☐	☐	Network Management Systems
37. ☐	☐	Terminal Emulation Boards
38. ☐	☐	Facsimile Machines
39. ☐	☐	Diagnostic Test Equipment
40. ☐	☐	DSU/CSU
41. ☐	☐	Data Security
42. ☐	☐	Data Compression Equipment
43. ☐	☐	Network Adapter Boards
44. ☐	☐	Microwave
45. ☐	☐	Messaging Software
A	B	TELECOMMUNICATIONS:
46. ☐	☐	PBXs (over 1000 lines)
47. ☐	☐	PBXs (200 - 1000 lines)
48. ☐	☐	PBXs (under 200 lines)
49. ☐	☐	Key Systems
50. ☐	☐	Automatic Call Distributors
51. ☐	☐	Voice Messaging Systems
52. ☐	☐	Video Teleconferencing Systems
A	B	SERVICES:
53. ☐	☐	Switched Voice
54. ☐	☐	Dedicated Leased Line
55. ☐	☐	T-1
56. ☐	☐	T-3
57. ☐	☐	Digital Data
58. ☐	☐	Packet Switched
59. ☐	☐	Centrex
60. ☐	☐	Central Office Lan
61. ☐	☐	Satellite
62. ☐	☐	On-Line Information
63. ☐	☐	ISDN
64. ☐	☐	EMail
65. ☐	☐	VSAT

17 Estimated value of networking equipment and services:

A: Which you helped specify, recommend or approva in the last 12 months?

B: Which you plan to help specify, recommend or approve in tha next 12 months?

A	B	
1 ☐	☐	$100 million and over
2 ☐	☐	$50 - $99.9 mill
3 ☐	☐	$25 - $49.9 mill
4 ☐	☐	$20 - $24.9 mill.
5 ☐	☐	$10 - $19.9 mill.
6 ☐	☐	$5 - $9.9 mill.
7 ☐	☐	$1 - $4.9 mill.
8 ☐	☐	$500,000 - $999,999
9 ☐	☐	Under $500,000

18 Estimated gross annual revenue of your entire company/ institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill.
3. ☐ $500 to $1 bill.
4. ☐ $100 to $499.9 mill.
5. ☐ $50 to $99.9 mill.
6. ☐ $10 to $49.9 mill.
7. ☐ $5 to 9.9 mill.
8. ☐ under $5 mill.

19 Estimated number of employees for your entire corporation:

1. ☐ over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ under 500

20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

1. ☐ Basic Rate Interface Terminal Adapters
2. ☐ Primary Rate Interface Equipment
3. ☐ Voice/Data terminals
4. ☐ Voice-only terminals
5. ☐ Data-only terminals

21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A PBX	B COS	
A ☐	☐	AT&T
B ☐	☐	ALCATEL
C ☐	☐	ERICSSON
D ☐	☐	FUJITSU
E ☐		HARRIS
F ☐		HITACHI
G ☐		ROLM
H ☐		INTECOM
I ☐		MEMOREX TELEX
J ☐		MITEL
K ☐	☐	NEC
L ☐	☐	NORTHERN TELECOM
M ☐		SAMSUNG
N ☐	☐	SIEMENS
O ☐		STROMBERG-CARLSON
P ☐		TOSHIBA
Q ☐	☐	OTHER ____________

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DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

> Systems Application Architecture "is trying to do for IBM's products what VMS did for us in the last decade."
>
> **David Stone**
> Vice-president of software products
> Digital Equipment Corp.
> Nashua, N.H.

Data Packets

Comdisco Disaster Recovery Services, Inc. (CDRS) recently said it is adding a Business Recovery Facility to its CDRS Net disaster recovery network in Bloomington, Minn., and said it is planning to add another in Waltham, Mass.

The firm will locate its Bloomington Business Recovery Center in a building owned by Mohawk Business Record Storage, Inc., which provides backup document, magnetic tape and film storage services. The company will locate its Waltham facility in a Polaroid Corp. building.

The new Business Recovery Facilities will house a mix of vendors' workstations, terminals and computer operator consoles. They will be linked to Comdisco's CDRS Net, which routes data over various carriers' T-1 and T-3 circuits to hosts in a Comdisco Computer Recovery Center.

Comdisco subscribers in the Bloomington and Waltham areas will be able to move such personnel as data entry clerks to the new Business Recovery Centers when a disaster strikes their own host computer or remote data entry equipment.

Data entry clerks can use workstations or terminals to send data via CDRS Net to the customer's own remote data center or to a backup processor at a Comdisco Computer Recovery Center. Computer operators can use operator consoles in the Business Recovery Center to operate hosts in a remote Computer Recovery Center.

Financial services provider hands MCI $15m data deal

Private net will link clients to user's data center.

By Jim Brown
Senior Editor

ST. LOUIS — Bridge Information Systems, Inc. recently signed a five-year, $15 million contract with MCI Communications Corp. to build a nationwide private data network that will link financial services clients to the company's data centers here.

The contract also calls for MCI to coordinate installation of local exchange carrier circuits that link Bridge Information Systems client sites to the private net. MCI will collocate the company's modems, time-division multiplexers and statistical multiplexers in 10 MCI points of presence (POP).

Collocating equipment in MCI central offices will save the user from renting office space and hiring personnel in different cities to house and maintain the equipment.

The deal represents the first time that Bridge Information Systems — which provides stock quotes, news feeds and data base services — will turn over all of its data traffic to a single carrier.

Under the agreement, Bridge Information Systems expects to generate considerable savings by handing off its data network to MCI, although the company declined to disclose any estimates. Until now, it has relied on analog lines supplied by MCI, AT&T and US Sprint Communications Co.

The new network promises to improve performance by replacing the web of existing analog circuits and reducing the number of circuits the company's clients needs to access multiple services.

In addition to cutting costs, Bridge Information Systems is installing the net to make its services more reliable. "What we provide to our clients must be provided 24 hours a day, and it must not fail," said Bernice Pennington, vice-president of communications at the company.

The new network will also provide better disaster recovery capabilities by routing data between customer sites and Digital Equipment Corp. or Tandem Computers, Inc. minicomputers in Bridge Information Systems data centers over two 56K bit/sec backbones. In the event one backbone fails, traffic can be rerouted to the other.

Previously, the company relied on multiple carriers for alternate routing.

(continued on page 10)

AT&T promo waives fees for new ASDS customers

By Jim Brown
Senior Editor

BASKING RIDGE, N.J. — AT&T last week announced a promotion in which it will waive certain fees for users that sign up for Accunet Spectrum of Digital Services (ASDS) circuits before mid-February.

Under the promotion, users will receive three months of ASDS service for free when they sign one-year contracts for five or more new 9.6K, 56K or 64K bit/sec ASDS circuits. Those ASDS circuits must be accessed via voice-grade analog or digital circuits leased from local exchange carriers and supporting speeds up to 64K bit/sec.

AT&T said a user ordering five 56K bit/sec ASDS circuits traveling 500 miles each will save $1,782 in monthly charges and mileage fees for each circuit for a total savings of $8,910.

Users ordering 25 or more low-speed ASDS circuits with analog or low-speed digital leased-line access for an 18-month period will receive four months of ASDS service free.

AT&T also said users opting to install a full T-1 ASDS access circuit and signing a one-year contract for two or more new 9.6K, 56K or 64K bit/sec ASDS circuits or a single 128K, 256K, 384K, 512K or 768K bit/sec ASDS circuit will receive a onetime $1,343 credit from AT&T to cover the cost of installing the T-1 access circuit.

Customers opting for full T-1 access to ASDS can use the remaining T-1 bandwidth to access other AT&T services such as Megacom 800.

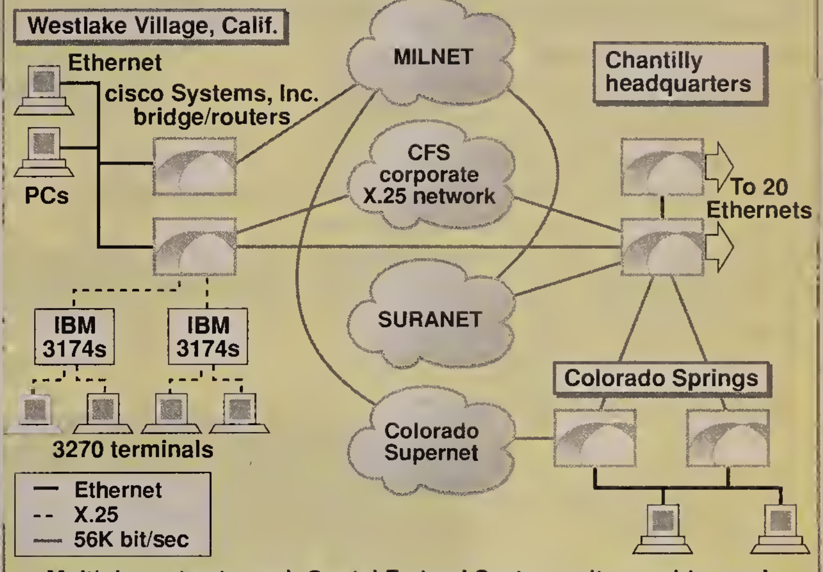
Installation

Users must have the service installed by June 1 in order to receive the waivers. However, waivers will be offered to customers that cannot get the service installed by June 1 as long as the delay is not the user's fault.

AT&T said the promotion applies to orders received before Feb. 19.

CFS' backbone strategy

Multiprotocol backbone offers redundant data paths



Multiple routes to each Contel Federal Systems site provide nearly 100% reliability for its IBM SNA and LAN traffic.

MILNET = Military Network
SURANET = Southeastern Universities' Research Association Network

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: CONTEL FEDERAL SYSTEMS, CHANTILLY, VA.

Backbone supports SNA and LAN traffic

Router-based multiprotocol backbone provides redundant paths, obviates need for parallel nets.

By Paul Desmond
Senior Editor

CHANTILLY, Va. — Contel Federal Systems (CFS) last week said it has constructed a nationwide, bridge/router-based multiprotocol backbone net that cuts line costs by supporting SNA traffic along with TCP/IP and other LAN protocols.

The network has saved CFS the expense and headache of installing separate nationwide backbones: one to support IBM Systems Network Architecture traffic and another to support data from local-area networks.

Faced with supporting users at a newly acquired site in California that needed access to an IBM mainframe here, CFS opted to employ cicso Systems, Inc. AGS bridge/routers that support X.25 traffic and many other protocols.

IBM terminal users are tied into the routers using IBM's Network Control Program (NCP) Packet-Switching Interface (NPSI), which encapsulates SNA data in X.25 packets for transmission across the backbone.

In that fashion, the same backbone can support SNA, Transmission Control Protocol/Internet Protocol, Digital Equipment Corp.'s DECnet and Apple Computer, Inc.'s AppleTalk, each of which are used here, at the new site in Westlake Village, Calif., and at an older CFS site in Colorado Springs.

Multiprotocol support wasn't the only factor that influenced CFS' backbone design; the company built its backbone to support at least two data paths to any site in an effort to guarantee network reliability for clients in the government sector (see graphic, this page).

"Our network has pretty much 100% reliability" because in addition to the dual data paths, each LAN is attached to the backbone with two routers, said Dan McCormick, manager of networking and integration for CFS. "Most people can't afford to do that. We couldn't afford not to."

When CFS acquired a division of the Eaton Corp. in Westlake Village early this year, it decided to discard the division's IBM mainframe and instead give IBM 3270 terminal users there access to an IBM 4381 mainframe at CFS headquarters in Chantilly.

> The company built its backbone to support at least two data paths to any site.
>
> ▲▲▲

Other requirements included the ability to route AppleTalk, DECnet and TCP/IP traffic among all three sites. TCP/IP is used to give personal computer users access to IBM, DEC and other computers, McCormick said.

Typically, one leased line

(continued on page 10)

Backbone supports SNA and LAN traffic

continued from page 9

would be needed to support the SNA data and another to support the multiprotocol bridge/routers that handle the rest of the traffic.

But since CFS places a premium on redundancy, the company would have required a backup route for every line, which means it would have needed four coast-to-coast 56K bit/sec lines. McCormick estimated the total extra line costs at about $8,000 per month. T-1 was not an option because a single T-1 line would not provide four diverse routes, he said.

Instead, CFS installed two cisco Systems AGS/3 bridge/routers at the Westlake Village site and put IBM's NPSI on its front-end processor here and on remote 3174 controllers, which support the 3270 terminals. The cisco Systems routers accept SNA traffic encapsulated in X.25, then encapsulate it again in IP for the cross-country trip, McCormick said.

> Enhancements to the cisco Systems routers will let the routers accept SDLC connections directly.
>
> ▲▲▲

The cisco Systems boxes also support TCP/IP, AppleTalk and DECnet, so the same 56K bit/sec link can support all four types of data traffic.

In addition, since the SNA traffic is encapsulated in X.25, CFS can use a link to its parent company's nationwide X.25 packet-switching net to provide a backup link for its SNA traffic. And cisco Systems' Interior Gateway Routing Protocol, the internal routing protocol its bridge/routers use, dynamically selects the most appropriate route to take based on current network traffic conditions.

Enhancements to the cisco Systems routers, due out in the first quarter of next year, will further improve performance by letting the routers accept Synchronous Data Link Control connections directly rather than encapsulated in X.25, McCormick said ("Router firms to support SDLC traffic," *NW,* Dec. 10).

Performance improvements are also under way at CFS headquarters here, where about 20 Ethernet LANs support an array of computers, including Sun Microsystems, Inc. workstations for engineers and DEC VAXes for business systems.

CFS is phasing out a configuration under which 10 routers, all located in the company's data center, are attached to an 80M bit/sec token-passing LAN backbone. Each of the 20 Ethernets here are attached to two of the routers.

The 80M bit/sec backbone is being replaced by two cisco Systems AGS+ routers, each of which will be tied to all 20 routers. CFS uses the routers' 530M bit/sec bus as its LAN backbone at headquarters.

Even though 14 of the LANs are currently attached to only one of the AGS+ routers, there has already been an order of magnitude improvement in routing speed within the headquarters building, McCormick said, and reliability is near perfect.

"Here in the headquarters building, availability is in the 99.99 percentile," McCormick said. ◘

Financial services firm hands MCI deal

continued from page 9

In addition, customers currently must have a separate link for each Bridge Information Systems service they receive, which increases the cost of the services and makes it more difficult for the company to manage the network. Those 9.6K or 19.2K bit/sec circuits are fed to one of 23 Bridge Information Systems locations, where data is multiplexed onto 9.6K or 56K bit/sec backbone circuits and passed off to a long-haul carrier's POP for transmission to the data center.

In the new network, computer systems at customer sites are linked to the nearest MCI POP via a leased line at various speeds. Bridge Information Systems clients will access data base services via 9.6K bit/sec links, use a 19.2K bit/sec line for stock quote feeds and receive news services via 9.6K bit/sec lines.

Customers subscribing to more than one service will be outfitted with a time-division or statistical multiplexer that will provide a 9.6K or 56K bit/sec aggregate link to the nearest MCI POP. The POP will route the data over the backbone to one of two POPs in St. Louis.

Under a separate contract signed last March, MCI will provide a T-3 microwave radio link from one of those POPs to one of Bridge Information Systems' two St. Louis data centers. Another MCI POP will be linked to the second data center via a fiber T-3 circuit leased from Southwestern Bell Telephone Co. Bridge Information Systems will connect the data centers via a T-3 link also leased from Southwestern Bell.

In the event a T-3 link from one of the MCI POPs near the data center fails, data can be rerouted over the alternate path to the data center. ◘

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1991 AGENDA

Industry Agenda: 1991
Axel Leblois, Chairman and CEO, IDC

1991 U.S. IT Spending Outlook
David C. Moschella, Sr. V.P., Worldwide Research, IDC

The Shifting Fortunes of the Networking Industry
Kim Myhre, Sr. V.P., Worldwide Consulting, IDC

The Restructuring of the Computer Industry
Panel Discussion, Chaired by David P. Vellante, V.P., Systems Research, IDC

Perestroika Comes to the Data Center: IBM and the MIS Revolt of the 90's
Frank Gens, V.P., Technology Assessment, Technology Investment Strategies Corp.

Managing Channels for Growth
Lee M. Levitt, Dir., Distribution Channels Research, IDC

Workstation Evolution: Up or Down
Vicki J. Brown, V.P., Systems Research, IDC

The 1991 PC Market: Which Way Will Pay?
Aaron Goldberg, V.P., Desktop Computing Research, IDC

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LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

Last month, Intergraph Corp. network users sent more than 1.6 million electronic mail messages among the company's 5,752 employees with E-mail boxes, according to Susan Crane, senior manager for telecommunications at the company.

Netnotes

Microcom, Inc. last week said it has enhanced its Relay Gold microcomputer-to-mainframe software to enable local-area network workstation users to establish several new connections to IBM hosts.

The Relay Token-Ring Gateway is software that runs on LAN workstations supporting Relay Gold software, enabling them to establish IBM 3270 terminal-emulation sessions over a token-ring network.

Microcom said the gateway is a less costly alternative to purchasing 3270 coaxial adapters. The Relay Token-Ring Gateway communicates directly with a Token-Ring Interface Coupler connected to each host. The Relay Token-Ring Gateway is available now and costs $149.

The company's Relay SDLC Dial-Up software enables LAN-based workstation users to establish 3270 sessions over dial-up lines supporting IBM's Synchronous Data Link Control protocol. Previously, Microcom offered 3270 support over dial-up asynchronous lines. Relay SDLC Dial-Up costs $149 and is available now.

Microcom also announced Relay/transfer for CICS, software that enables IBM MVS/CICS users to transfer files to LAN workstations supporting Relay Gold. Microcom said the software offers better error checking capabilities and performance than IND$FILE file-transfer features. Relay/transfer for CICS is available now. Pricing ranges from $8,500 to $16,750. ◘

NetFRAME bolsters line with mid-range superserver

NF200 is ideal at handling CPU-intensive tasks.

MILPITAS, Calif. — NetFRAME Systems, Inc. recently added a new member to its family of multiprocessor local-area network superservers.

The Intel Corp. 80486 microprocessor-based NF200 is packaged in the same size cabinet as the existing 80386-based NF100 but is a higher powered version. Other products in the line include the high-capacity 80386-based NF300 and the 80486-based NF400.

All of the products are based on a mainframe-like hierarchical bus architecture and are designed to move large of amounts of data quickly and efficiently. Like the other servers in the line, the NF200 supports Novell, Inc.'s NetWare 386 and Microsoft Corp.'s OS/2 LAN Manager network operating systems.

According to Mark Comiso, NetFRAME product manager, the 486-based NF200, like the NF400, is ideal for supporting data base and other CPU-intensive network tasks. The 386-based machines are designed primarily for file sharing.

Other than the different type of central processor, the NF200 is similar to the NF100. Both come standard with 8M bytes of main memory, 380M bytes of integrated disk storage and one I/O processor board with connections for Small Computer System Interface-II devices, RS-232, RS-422 and either Ethernet or token-ring LANs.

The NF200 can support as many as three I/O processors, making it possible to support a maximum of three separate LANs.

The processor cards have a bandwidth of 6M byte/sec and plug into the server's dual 100M byte/sec buses.

Like the other models in the NF line, the NF200 supports NetFRAME's existing SAM and RCON network management and administration software tools.

SAM is a maintenance tool that enables a server to originate a phone call to network administrators, notifying them of system malfunctions.

Through SAM, administrators can then complete a full diagnostics routine and remotely control system activity.

RCON is a Microsoft Windows 3.0-based application that enables administrators to monitor and supervise multiple NetFRAME servers from any personal computer on the network.

The NF200 costs $26,950 in a basic configuration.

For more information, write to NetFRAME at 1545 Barber Lane, Milpitas, Calif. 95035, or call (408) 944-0600. ◘

IBM unveils Token-Ring adapter for PS/2 servers

WHITE PLAINS, N.Y. — IBM last week announced an adapter for Personal System/2s positioned as servers in a local-area network that it said exploits the microcomputer's bus to improve server performance.

The introduction of the IBM Token-Ring Network 16/4 Busmaster Server Adapter/A is the first hardware interface IBM has offered specifically for microcomputer servers.

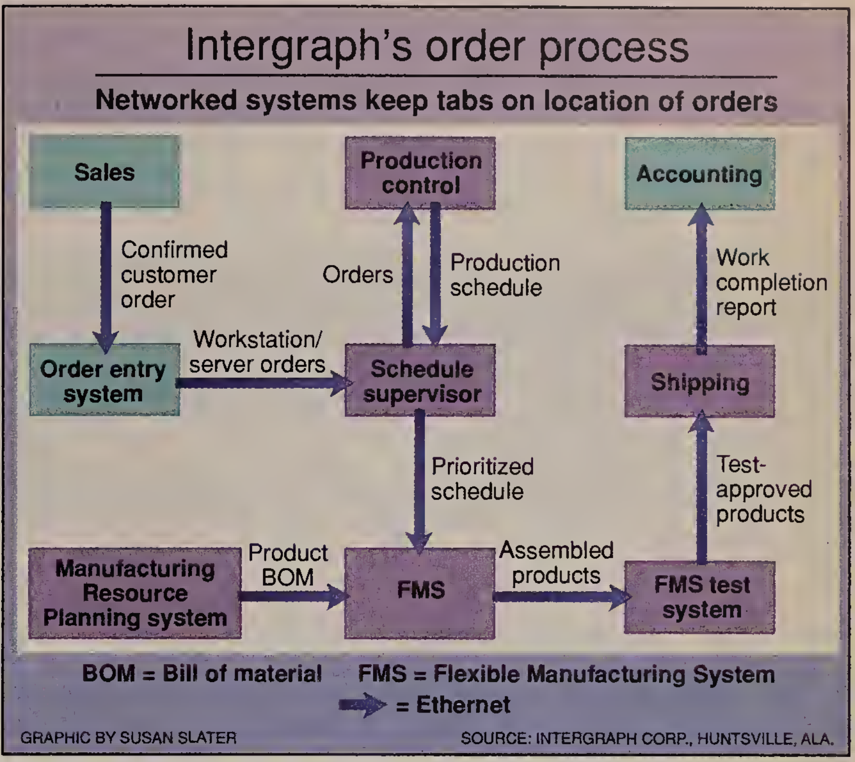
The device is used to attach a PS/2 server directly to a 4M or 16M bit/sec IBM Token-Ring Network. IBM said the device requires less host processor interaction than its previous Token-Ring adapters, freeing server memory for application or data base processing.

The IBM Token-Ring Network 16/4 Busmaster Server Adapter/A offers 25% greater throughput and uses one-sixth the host memory of IBM's other 4M/16M Token-Ring adapters, according to a company spokesman. The adapter represents the first time IBM has offered a Token-Ring interface designed for PS/2 servers. Previously, the company offered a similar product for its RISC System/6000 servers.

IBM said the card's busmastering feature offers adapter-to-system memory transfer independent of the host's memory. By contrast, nonbusmaster boards require server memory to handle data transfer from the server to the network and vice versa.

In a statement of direction, IBM said it would provide the new adapter with support for IBM's OS/2 Extended Edition and IBM LAN Server software.

The IBM Token-Ring Network 16/4 Busmaster Server Adapter/A will be available by the end of the month for $1,030. ◘


Intergraph's order process

Networked systems keep tabs on location of orders

BOM = Bill of material FMS = Flexible Manufacturing System

➡ = Ethernet

GRAPHIC BY SUSAN SLATER

SOURCE: INTERGRAPH CORP., HUNTSVILLE, ALA.

Factory net smooths production process

LAN speeds order processing by linking various departments to flexible manufacturing system.

By Charles Bruno
Assistant Managing Editor

HUNTSVILLE, Ala. — Two years after embarking on an ambitious network project to streamline manufacturing operations, Intergraph Corp. is cranking out CAD/CAM workstations and servers in less than half the time previously required.

Now in the No. 2 position behind IBM in the computer-aided design and manufacturing software market and with a goal of $1 billion in sales for next year, Intergraph has installed a $2 million Flexible Manufacturing System (FMS) to guide orders for its workstations and file servers from initial receipt until they reach the company's shipping docks.

The network, which has been up almost a year, has helped Intergraph increase production capacity, cut inventory, assure the quality of finished goods and provide constant production updates on the status of any order.

"This is a state-of-the-art factory that proves the value of integrating local-area networks with production control equipment," said Leroy Cole, director of manufacturing engineering.

Hip-deep in conveyors

Realizing that factory-floor space was at a premium, Intergraph manufacturing managers in 1988 began exploring the idea of installing a high-rise automated storage-and-retrieval system to free up floor space.

"We were hip-deep in a maze of conveyors," Cole said. "We couldn't route work-in-process orders easily, and we knew we needed a better interface to our work authorization system that releases orders to the factory."

As a result, the company redesigned the factory layout and installed an Ethernet LAN that now serves as the backbone to link various production and administrative systems.

The heart of the new factory is an Eaton-Kenway Corp. FMS, a two-story superstructure that consists of two vertically stacked storage locations with production lines wrapped around them.

> The network has helped increase production capacity and cut inventory.
>
> ▲▲▲

One unit serves as an automated storage-and-retrieval system, a warehouse of parts and subassemblies that feeds workers on adjacent assembly lines with materials to build the company's Interpro workstations and Interserv network file servers.

The other vertical structure is a test center that receives as many as 300 finished workstations or servers and stores them on intelligent pallets that plug into the superstructure, allowing a battery of tests to be downloaded to the workstation.

(continued on page 12)

Factory net smooths production

continued from page 11

"This type of vertical setup lets us produce double what we previously could have manufactured," Cole said. "If we didn't install the FMS, we'd have had to build another facility to keep up with demand."

In addition, the new setup lets Intergraph ready products from receipt to shipping in little more than a week, as opposed to two weeks previously. The key to lopping order processing time in half has been the integration of production systems with administrative systems, all of which now reside on a campuswide Ethernet.

"In order to become a world-class supplier, we had to speed order processing," Cole said.

Handing off orders

Today, when an order is received, it is keyed into an order entry system (see graphic, page 11). Once a week, orders are transferred over the Ethernet network to a scheduling system that groups them by product number and submits orders to a production control system that generates a master production schedule.

The production control system sends the final schedule to the FMS, which arranges part numbers by product families and determines the order in which to build the different products.

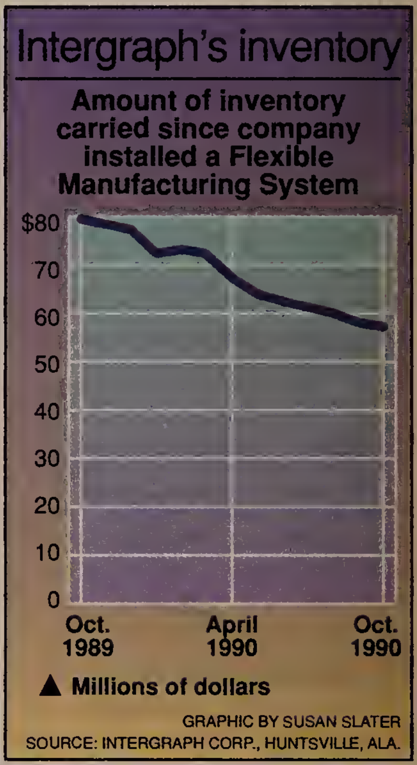
The FMS receives nightly updates from a Manufacturing Resource Planning system that updates parts lists to reflect any engineering change.

The FMS also checks its parts inventory and reports any shortages to a stock room, where stock clerks kit the necessary materials and ship them to the FMS, where they are loaded into the unit. When the parts arrive, the FMS begins releasing orders and actually delivers the parts to assemblers via chutes along the production line adjacent to the FMS.

Assemblers build the products, which are stationed on an intelligent pallet that rolls from station to station. A bar code on each pallet identifies the orders.

The FMS counts the parts distributed to assemblers and automatically generates inventory reports to replenish its stock.

Fully assembled products are placed on a conveyor that shuttles them to the test storage facility, where a stacking robot scans the bar code on each pallet to determine the tests required for that unit.


Intergraph's inventory

Amount of inventory carried since company installed a Flexible Manufacturing System

GRAPHIC BY SUSAN SLATER
SOURCE: INTERGRAPH CORP., HUNTSVILLE, ALA.

The stacking robot also places the product in a slot on the test system. A 24-hour battery of tests is downloaded across an internal bus in the test system enclosure, across the intelligent pallet and into the workstation.

If a unit fails to pass the tests, a controller instructs the robot to take the failed device from its rack and place it on a conveyor destined for a repair center.

When a unit passes the test phase, the test controller issues a message to a Digital Equipment Corp. VAXcluster in a separate building. That message identifies the customer order and instructs the VAX to download the appropriate system and application software over the network to the workstation or server.

Once the software is loaded, the units are transferred to the shipping department, where the bar code is scanned into the network.

"It's a closed-loop system now," Cole said. "The short of it is that we can get products to the customer faster and assure them that they're quality goods the first time out." ◼

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Worth Noting

Information system "departments are too incestuous. These people have to start branching out more and meeting managers in other departments. Only then can others in the company come to know the strategic value of the IS department."

Terry Norman
Director of corporate
telecommunications
Anacomp, Inc.
Indianapolis

Association Watch

The **Help Desk Institute** will hold its annual International Help Desk Conference Feb. 24 to 28 at the San Diego Marriott and Marina on the Bay in San Diego.

The conference costs $795 for members of the Help Desk Institute and $895 for nonmembers.

For more information, call (800) 248-5667 or (719) 531-5138.

The third semiannual Hundreds of Partners awards were presented this month by the consulting firm *Edi, spread the word!* at the **Electronic Data Interchange Association's** 22nd National Conference in Washington, D.C.

The award winners are: greatest number of trading partners, Burlington Northern, Inc.; greatest number of suppliers as trading partners, Wal-Mart Stores, Inc.; fastest implementation rate for an EDI program, Wal-Mart; fastest implementation rate for a country, Singapore.

Award winners for the largest number of trading partners by industry were Levi Strauss & Co., Chrysler Corp., ITT Corp., Super-Valu Corp., Texas Instruments, Inc., 3M Co., Burlington Northern, Wal-Mart, Caterpillar, Inc. and Cummins Engine Company, Inc.

J.C. Penney to expand EDI program to 5,000 suppliers

Firm plans to integrate EDI, Quick Response.

By Maureen Molloy
Staff Writer

DALLAS — Retail giant J.C. Penney Company, Inc. has launched a major expansion of its electronic data interchange program that will link more than 5,000 suppliers to the retailer's headquarters here during the next three years.

With the blessing of top management, J.C. Penney's EDI Manager William Lane is drafting a strategic plan that will make EDI a key component of J.C. Penney's Quick Response program, which is designed to shorten order cycles and improve cash flow management.

"EDI will allow us to get the right merchandise in the right quantities to the right store at the right time," Lane said. "Each store will know exactly what to buy because it will know exactly what's been sold — and that translates into less inventory and fewer markdowns."

More than 600 suppliers are now exchanging documents electronically with J.C. Penney, and merchandise from these companies arrives at J.C. Penney's stores up to 10 days earlier than before.

Lane said this improved efficiency has made J.C. Penney anxious to implement EDI with all of its other suppliers.

As one of the nation's leading retailers, J.C. Penney — which generates more than 10 million purchase orders annually — stands to benefit greatly from wide-scale use of EDI.

The company, which last year had sales of more than $16 billion, operates 1,330 retail stores and more than 2,000 catalog units. Nearly 7,000 suppliers are associated with its retail operations, and more than 1,000 suppliers provide goods to its catalog operations.

The push into large-scale EDI came about a year ago when J.C. Penney's vice-chairman informed suppliers that the firm would actively pursue EDI using ANSI standards and recommended that they start preparing to send documents electronically.

Lane said the company's senior management easily bought

(continued on page 14)

EXECUTIVE BRIEFS

BY WAYNE ECKERSON

Out of work, not out of luck. Job seekers who are unemployed are no longer at a significant disadvantage in the hiring process, according to a new survey of professional recruiters.

More than three-quarters (77%) of those surveyed said they give employed and unemployed candidates equal consideration in the hiring process. In addition, more than 80% said they do not hold a negative view of job candidates who are in outplacement.

The survey was distributed to members of the National Association of Corporate and Professional Recruiters (NACPR) and was based on 243 responses.

"There has been a tremendous change in attitude among both executive search specialists and human resources departments," said William Adair, director of human resources for CalComp, a Lockheed Corp. company in Anaheim, Calif., and an NACPR member. "Just a few years ago, an individual's unemployment would have been a glaring stigma. In today's economic climate, it's a red badge of courage."

No growth for EDI. The number of companies implementing electronic data interchange will not increase significantly during the next two years, according to a new study by Input, a computer market research and consulting company based in Mountain View, Calif. Titled "The EDI Market, 1990-1995," the study states that the slow growth of EDI is contributing to a wave of consolidations among EDI software and communications providers.

However, companies currently using EDI will continue to expand their programs by adding new EDI applications such as electronic funds transfer and shipping schedules, the study said.

For information about the report, call Doug Tayler, Input's director of research, at (415) 961-3300.

Putting CIM to work

Johnson & Johnson's strategy for implementing CIM

People/organization strategy:

1. Establish a interdepartmental CIM committee
2. Find a CIM champion
3. Identify and prioritize the plant's information needs
4. Educate all levels of the work force about CIM
5. Develop a 5-year strategic CIM plan

Technology strategy:

1. Simplify operations and eliminate wasted steps
2. Install or upgrade sensors on factory-floor equipment
3. Install PLCs
4. Connect PLCs to a supervisory control workstation in a factory cell
5. Expand CIM technology to other factory cells
6. Connect workstations in a network
7. Add higher level workstations to the network for use by engineers and plant managers
8. Add a gateway to the plant's host computer
9. Integrate manufacturing and host applications
10. Implement additional features, such as EDI and expert systems

CIM = Computer-integrated manufacturing
PLC = Programmable logic controller

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: JOHNSON & JOHNSON, NEW BRUNSWICK, N.J.

Johnson & Johnson develops CIM guide

Company's 15-step method designed to aid CIM implementation in its operations worldwide.

By Wayne Eckerson
Senior Editor

NEW BRUNSWICK, N.J. — In an effort to foster world-class manufacturing at its operations worldwide, Johnson & Johnson has developed a 15-step methodology to facilitate the implementation of computer-integrated manufacturing (CIM).

The methodology, which was developed through extensive research of successful CIM projects both within Johnson & Johnson and at other companies, provides a template to guide Johnson & Johnson's more than 175 business units in initiating or expanding CIM projects.

According to George Thompson, associate director of the Office of Operations Technology and Development at Johnson & Johnson here and the author of the methodology, CIM provides employees at all levels of the manufacturing process with information to make better decisions. It also provides the architectural "glue" to support strategic programs such as just-in-time manufacturing and total quality management.

"[Corporate headquarters] devised the CIM methodology to assist and energize operating units to achieve world-class manufacturing," Thompson said.

The 15-step methodology is broken down into two parts: The first five steps deal with people and organizational issues, and the remaining 10 specify strategies for implementing CIM technologies (see graphic, this page).

The key to CIM is to get the support of as many individuals as possible within the company, Thompson said.

One of the best ways to do this is to create an interdepartmental CIM planning group. The group should have representatives from at least engineering, operations and information systems, and should work to define CIM within the context of the company and steer its implementation.

The group should also define and prioritize the information needs of each department within the company. It should then incorporate these needs into a five-year, CIM strategic plan that is closely tied to the company's long-term business objectives.

> The key to CIM is to get the support of as many individuals as possible in the company.
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The plan should establish a vision for CIM within the company but also include a one- or two-year plan that details how the company will begin to implement CIM in the factory.

Because CIM typically involves organizational and operational restructuring and the outlay of a great deal of money, CIM projects inevitably fail if they do not have the support of upper management, Thompson said.

(continued on page 14)

Johnson & Johnson develops CIM guide

continued from page 13

To get top-level buy-in, CIM projects need the backing of a CIM champion, usually someone who is well-respected in the organization and who can demonstrate the strategic benefits of CIM in terms top management can understand.

While strategic planning provides a top-down vision of CIM, CIM technologies must be implemented from the bottom up, starting at the factory floor, to achieve the best possible results, according to Thompson.

CIM planners should start with small high-priority projects that offer the biggest possible gains at a minimum risk, he said.

In general, CIM implementation should follow the axiom of simplify, automate and integrate, Thompson said.

Before installing new technology, CIM planners need to examine manufacturing processes to identify and eliminate redundant or wasteful procedures. Process simplification can be achieved by combining manufacturing steps, reconfiguring production lines, simplifying paper procedures and streamlining product design, Thompson said.

Automating the factory floor for CIM begins with installing sensors on manufacturing machinery, such as boilers or rollers, in one work cell. These sensors, which continuously measure certain aspects of a manufacturing process, such as temperature or pressure, are then attached to a device such as a programmable logic controller (PLC) that captures sensor data in real time and translates it into information for use in computer systems.

The PLC is then attached to a personal computer, also on the factory floor, which is used by a shop-floor operator to monitor and direct a manufacturing process.

As the initial CIM project begins to bear fruit, additional factory cells can be upgraded with CIM technology. These islands of automation can then be connected via a net to improve work flow among areas.

Once work cells are interconnected, higher level workstations can be added to the network. These workstations will give people in engineering, finance and other departments access to manufacturing data collected on the factory floor that they can analyze for their own purposes.

Finally, the plant's host computer, usually a mainframe, should be attached to the network via a gateway. The host will support a relational data base that is continually updated with data collected from the factory that will support integrated applications such as inventory planning, order processing and production scheduling.

In this completed CIM model, information will flow upward from the factory floor to the mainframe, and downward from applications on the host and higher level workstations on the network to PLCs and machinery on the factory floor. It will also flow outward to suppliers and customers in the form of electronic data interchange and just-in-time manufacturing as the company becomes more confident in its use of CIM technologies. ◪

J.C. Penney to expand EDI program

continued from page 13

into the EDI concept because they believed the technology could help J.C. Penney fulfill its business strategy of getting closer to its customers. Since EDI allows for more accurate stock records and shortened order cycles, Lane said each store can better match inventory supplies with demand.

Lane said he will concentrate first on getting J.C. Penney's 1,000 largest suppliers — beyond the 600 currently using EDI — into the program and adding smaller suppliers incrementally.

He will also continue adding more EDI transactions — such as purchase orders, invoices, advance ship notices, order-status inquiries, and sales and inventory transactions — to the nine they've already implemented as they become available from the Voluntary Interindustry Communications Standard, a subset of ANSI geared to the retail trade.

J.C. Penney and its current EDI partners use Rockville, Md.-based GE Information Services' (GEIS) network for communications. J.C. Penney operates its own network, which is used primarily for credit authorization, credit and debit card settlements, and for capturing and delivering point-of-sale information.

"We have enough programming to do already and had no desire to compete in the EDI arena, too," Lane said. "We chose GEIS because they can take care of the complexities involved in linking our suppliers, from initial contact through implementation."

Lane said GEIS is also making the implementation process smoother by offering software and technical assistance at a discount to suppliers that sign up with J.C. Penney.

Under the retailer's EDI plan, sales and other information from each of J.C. Penney's stores and catalog centers are sent daily to headquarters here. Purchase and shipment orders are then generated and transmitted electronically to suppliers.

Suppliers ship requested merchandise directly to the individual stores and catalog centers, while all EDI invoices are sent to Dallas.

J.C. Penney transmits documents over an IBM Systems Network Architecture link to enter the GEIS net via a modem and SNA link to a mailbox on the network. GEIS then takes the documents stored in J.C. Penney's box and transmits them to the appropriate supplier's mailbox. GEIS also takes all EDI transactions stored in the suppliers' mailboxes and transmits them back to J.C. Penney's data center here. ◪

FAXNeT is a service designed to help readers of *Network World* gather important information via FAX on products and services advertised in *Network World*.

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Listed below in the FAXNeT Directory are the FAX numbers of participating advertisers in this week's issue of *Network World* and the page number where the ad appears. To use FAXNeT cut out the FAXNeT form and make a copy of the form for each inquiry you want to make. Then just FAX it to the vendor's number listed in the FAXNeT Directory.

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INTERNATIONAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

World News

The **International Telecommunications Satellite Organization** last week said it intends to spend more than $200 million to buy two new high-capacity satellites expected to be launched in 1994 and 1995.

INTELSAT is based in Washington, D.C. and operates a network of 15 satellites used to support most of the world's international satellite communications. The organization will use the two new INTELSAT VII satellites to replace two INTELSAT V-A satellites slated to be decommissioned when the two new INTELSAT VII satellites go into service.

The new INTELSAT VII satellites will be the most powerful satellites ever deployed by INTELSAT. They will support about 50% more Ku-band capacity than the first five INTELSAT VII satellites, which are scheduled to be launched from 1992 to 1994, according to Maury Mechanick, vice-president for INTELSAT policy and representation at Communications Satellite Corp. in Washington.

Mechanick said the Ku-band capacity will primarily be used to support international private-line services and television broadcasts. He said an increase in power will let vendors reduce the size of earth stations used to send and receive satellite signals.

The **European Commission** recently moved forward with a proposed new directive that would force European carriers in one country to let

(continued on page 16)

TelMex goes private

Terms of the privatization of Telefonos de Mexico S.A. de C.V.

Winning bidders

Consortium comprising:	**Bid**
Grupo Carso	$859.6 million
Southwestern Bell Corp.	$485.8 million
France Telecom	$412.2 million
	Total bid: $1.758 billion

Losing bidders

Consortium comprising:	
Acciones y Valores de Mexico, S.A. de C.V.	
Casa de Bolsa	
GTE Corp.	
Telefonica de Espana	
	Total bid: $1.687 billion
Grupo Gentor	Total bid: $700 million

Public net improvements scheduled

- Annual 12% increase in access lines through Dec. 31, 1994.
- By 1995, maximum six-month wait for new access lines.
- Modernization of public net infrastructure, including installation of fiber-optic and digital technology, as well as support for new services.

SOURCE: SOUTHWESTERN BELL, ST. LOUIS, AND BANCO INTERNACIONAL, SNC, MEXICO CITY
GRAPHIC BY SUSAN J. CHAMPENY

New Telmex management bodes well for net's users

Owners obligated to upgrade network facilities.

By Barton Crockett
Senior Editor

MEXICO CITY — The recently announced plans to privatize Telefonos de Mexico S.A. de C.V. (TelMex) should help network users by injecting capital and bringing new management to the troubled national carrier.

TelMex, which receives more traffic from the U.S. than any other foreign carrier, has been criticized by users for operating an unreliable network, responding slowly to service requests and allegedly forcing users to pay off local officials to get circuits installed.

Users expect that TelMex's new owners, a consortium comprising the Mexican firm Grupo Carso, along with France Telecom and Southwestern Bell Corp., will spend billions of dollars to upgrade TelMex facilities and work hard to revamp what are sometimes considered shoddy business practices.

"I think this is good for the industry and good for Mexico," said James Bailie, an independent consultant in Bethesda, Md. Until recently, Bailie worked as an international network manager at United Technologies Corp., which operates a network linking manufacturing facilities in Mexico to a corporate net in the U.S.

> "I think this is good for the industry and good for Mexico," James Bailie said.
>
> ▲▲▲

Earlier this month, Grupo Carso, France Telecom and Southwestern Bell earned the right to take over TelMex after offering the highest bid among three final-

(continued on page 16)

Exec offers advice on European net links

TMA officer says firms planning to build nets in Europe must plan for numerous local regulations.

Q&A Ron Bell, head of group telecommunications at British Petroleum Company PLC is one of Europe's most influential network managers.

Overseeing the company's corporate backbone network, Bell manages links between London and Australia, Tokyo, the U.S., and Brussels, Belgium. The network supports the transmission of voice, data and videoconferencing traffic.

Bell also serves as deputy chairman of the Telecommunications Managers Association (TMA), a leading user group with more than 900 U.K. members.

Bell started his career in telecommunications as an engineer at British Telecommunications PLC and later worked as manager of network operations for Zambia's public telephone company.

He subsequently served as a network manager at Cadbury Schweppes PLC and the European unit of Ford Motor Co. At both companies, he helped design and install large, pan-European private nets.

Bell spoke with *Network World* Senior Editor Barton Crockett during TMA's recent conference and exhibition in Brighton, England, about the challenges U.S. companies face when building networks in Europe.

What do you think is the biggest problem U.S. users run into when building networks in Europe?

There is still this perception by American users that when you link to Europe — because Europe is about the same size as the U.S. — it's just as easy as [doing so in] the U.S.

There's not the general appreciation that you're crossing many national boundaries, that each nation has its own regulations and that this occurs over relatively short distances.

British Petroleum's Ron Bell

[American] users are starting to appreciate the difficulties, but it's only the companies that have had people based over here for a while that have that appreciation. The companies that still try to run their European telecommunications from the U.S. are the ones that have the problems.

What kind of restrictions do users face with private networks in Europe?

It depends on what you want to do. Let's say, for example, you've got a multiplexer in Brussels. Maybe you've got a 64K bit/sec link [from London to Brussels]. And you may have a 9.6K bit/sec link come out [from the multiplexer in Brussels] and go on to Paris.

Quite often, the country [in

(continued on page 16)

What it takes to be the international specialist. #1 in a series.

"Overseas facilities management centers."

—Peter Moebius,
VP—Europe & Africa
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See The FAXNeT Form on Page 14

New mgmt. bodes well

continued from page 15

ists to purchase a 20.4% stake in the carrier from the Mexican government ("Briefs," *NW,* Dec. 17). That stake represents a majority of TelMex's full voting stock. The deal was expected to be finalized late last week.

In addition to boding well for users in Mexico, the deal also represents another aggressive international expansion by a regional Bell holding company. During the past year, the RBHCs have committed billions of dollars to purchase and build public networks in such countries as the U.K. and New Zealand ("RBHCs pump big bucks into U.K. nets," *NW*, Dec. 3).

Southwestern Bell is spending $486 million for its stake in the Mexican carrier (see graphic, page 15).

"We believe TelMex is a real growth opportunity, unlike telephone companies in the U.S. and Europe, which are mature industries," said Ron Symes, Southwestern Bell's director of Latin American business development.

Some observers argue that such investments may represent a flight of capital that could be better spent upgrading the U.S. public net.

When they gain control, the three owners will inherit a troubled carrier with facilities in need of improvement. In fact, one of the principal goals of the privatization is to bring in new management that will invest the capital needed to improve TelMex services, according to Raul Robledo, project manager for the TelMex privatization at Banco Internacional SNC, which is acting as the government's agent in the deal.

Under the terms of the transaction, the government is requiring the new owners to increase the number of local access lines provided by TelMex by 12% per year for each of the next five years. Currently, TelMex only operates about five million access lines for a population of 81 million. The U.S. has an access-line penetration rate of about one access line for every two people.

In addition, the Mexican government said that by 1995, TelMex will be required to deliver new access lines within six months of the date they are ordered. Currently, new lines can take 1½ years or longer to deliver, Symes said.

The three owners will inherit a troubled carrier with facilities in need of improvement.

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TelMex also will be required to invest aggressively in new digital switching and fiber-optic technologies. Symes said that during the next five years, TelMex will be required to introduce such new services as dual-tone multifrequency telephone services, call forwarding and call waiting.

In addition, TelMex will continue an ongoing project to rebalance network tariffs by increasing local service rates and reducing long-distance and international rates.

The Mexican government estimates that investments in new facilities and services could total $10 billion to $12 billion during the next five years, Robledo said. Symes added that this money will come from TelMex revenue or loans and will not be funneled from the owners' other business operations.

While welcoming the investments, several users emphasized that the new owners also will need to improve TelMex business practices.

"Right now, you've got graft, corruption and everything else you can think of down there," said a user with large operations in Mexico who requested anonymity.

Robert Alex, president of RTA & Associates, a consulting firm in Farmington Hills, Mich., that specializes in helping users build nets in Mexico, said it is common practice for some independent contractors working for TelMex to demand large payments from users in order to get TelMex to deliver network facilities.

Symes said that over time, the new owners will work to improve TelMex's business practices and phase out business activities some observers consider questionable. ◼

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Exec offers advice on net links

continued from page 15

this example, France] will say, "You're not allowed to do that. You're only using this to benefit from cheaper tariffs. We won't let you do that."

[The PTT will say that] you have to lease a circuit from Paris all the way back to London because that tariff is higher [than the tariff for a circuit from Paris to Brussels] and the PTT doesn't want to lose revenue. Now it's becoming more and more open, but this is the situation that I find in some countries today.

Another example of the problems users face is this: Let's say a user wanted a 2M bit/sec voice link from [the U.K.] to Germany.

It's allowed internationally, but if you then wanted to extend it across Germany, you wouldn't be allowed to because you can't use private 2M bit/sec links for voice in Germany.

Not at all?

That's right. You can go into [Germany] with a 2M bit/sec link with voice. But then you can't extend it [within Germany]. It stops there at whatever city you happen to be going to.

Another thing that happens [is that] when you lease a 2M bit/sec link in [the U.K], you genuinely get 2M bit/sec. When you lease it in Germany, time slot 16 is reserved by the [Deutsche] Bundespost [Telekom] for its own purposes.

Time slot 16 is used for signaling on a private switched network. You can't have a private switched network in Germany for that reason.

So these are the technical [and regulatory] differences that I say U.S. users and users in Europe don't appreciate a lot of the time.

Is regulation the biggest difficulty users face in Europe?

I think its sort of an equal partner with technical differences. Almost every nation, every PTT, has a different type of network using different standards. And, of course, arranging compatibility is rather difficult.

Say you want to put one multiplexer in Brussels and another in Paris and London. But while the multiplexer might be approved [for use on the public net] in London, it may not be approved for use in Brussels or Paris.

So what do you do? You've got to provide another multiplexer. So right away, if you have an application that is going to work in London and Paris, you've got to have two different multiplexers and two different network management systems.

Is it possible to deploy one multiplexer in the 12 Common Market countries?

Not as far as I'm aware. With PBXs, it's even worse. But that's going to change. That's why you've got [the European Telecommunications Standards Insitute, which is preparing pan-European standards for connecting terminal equipment to the public network].

But it has taken the U.K. 10 years to write its approval standards for the main items of equipment — multiplexers, PBXs and modems. ETSI only started doing so last year.

So let's say the process is sped up and they manage to do it in six or seven years. We're still talking about six or seven years from 1989.

Doesn't ETSI face a more complicated task than the U.K. did in developing equipment approval standards?

Absolutely, because they've got to have a document that covers the different networks in each country.

How do users find out about European regulatory and technical restrictions?

With difficulty. It really involves going to the country, talking to people and talking to other users. It's the same way you find out about regulations in any country.

Almost every nation has a different type of network using different standards.

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You've almost got to be on the spot because, generally, the information is published in so many diverse forms that it's difficult unless you're prepared to spend a long time finding out what the restrictions are.

Given this difficulty, do you think Americans should try to build pan-European networks without deploying personnel in Europe?

I think it would be totally unrealistic. They would be too far away to find out about all these national differences — physically too far away. You couldn't do it by correspondence or even telephone.

Users don't have to do it themselves. They could have a consultancy that would provide that kind of assistance. That's probably the most economic way to do it.

What about one-stop shopping arrangements for international private lines. Do you think they are a good deal?

Let me tell you what happened with British Petroleum. We had a one-stop shopping deal with British Telecom where we ordered a 2M bit/sec link to Brussels, and they said they'd get it all done — which they did.

Then it went wrong. So we reported it to British Telecom, and they fixed it.

And the next thing we knew, it was taken out of service by the Belgian [Regie des Telegraphes et des Telephones]. We lost it the second time because there was no coordination between RTT and British Telecom.

So I remain unconvinced that these things work.

And there's another side, too. On one hand, there's a need for the PTTs to cooperate because the public networks [that they operate must interconnect]. But on the other hand, there's competition [between carriers].

It's what everyone wants — genuine global one-stop shopping. But I can't say from a practical point of view that it's ever going to work because all the players are going to be in competition with one another. ◼

World News

continued from page 15

users attach equipment to their public net that has been approved for use on the public net in another country.

The second-phase directive was approved by the European Parliament earlier this month, according to a European Commission spokesman. The directive now moves over to the European Commission's Council of Telecommunications Ministers, which could give final approval to the directive by early next year, the spokesman said.

US Sprint Communications Co. last week said it has struck deals with four major Japanese credit card issuers that will enable a Japanese traveler in the U.S. to dial an 800 number, reach a Japanese-speaking operator, complete calls to any location served by US Sprint and have the call billed to a credit card.

US Sprint said it has signed the agreement with Daisi Finance, Inc., Life Company, Ltd., Jaccs, Inc. and Diners Club International for the charge card Diners Club issues in Japan. US Sprint is already providing the same service in conjunction with JCB International, Japan's largest credit card company. The carrier said it plans to strike a similar deal with Visa International, Inc.

Infonet Services Corp. recently disclosed plans to link its Notice 400 electronic messaging service with AT&T Mail via an X.400 gateway. The interconnection will let Notice 400 users send messages to AT&T Mail subscribers and vice versa. ◼

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Equinox upgrades ELS-48 with new booting options

Equinox Systems, Inc. recently announced enhancements for its **ELS-48** terminal server for Digital Equipment Corp. environments that use the Local Area Transport protocol for communications with DEC VAX minicomputers.

The enhancements include the ability to support both firmware booting and downline loading of the server, as well as new configuration and monitoring options.

The Ethernet-compatible ELS-48 supports a maximum of 48 ports, with each port running at 38.4K bit/sec.

According to Equinox, most terminal servers only support one booting option; they either load the operating system from firmware or download it from a host computer on the network. The enhanced ELS-48 supports both options, overcoming limitations of either singular option.

The ELS-48 is firmware-based, so it boots automatically when it is turned on, meaning its ability to kick in is not dependent on a VAX being available to downline load its operating system.

In addition, it can be downloaded from any VAX on the network using the standard Network Control Program (NCP) utility included with VMS, making it easier to upgrade software on far-flung terminal servers.

The device was also enhanced with a variety of features designed to simplify network configuration and operation. Server configuration can now be changed from any terminal through the NCP program on the VAX or from any other terminal on the network using the Equinox Remote Console facility.

Additional monitor and status screens give more information, and enhanced commands reduce the number of keystrokes needed to change configuration parameters.

The enhanced servers are available now, and all existing units can be field upgraded for a nominal charge. ELS-48 prices start at $3,900 for a 24-port server and $6,000 for a 48-port box.

Equinox Systems, Inc., 14260 S.W. 119 Ave., Miami, Fla. 33186; (305) 255-3500.

Unix stack offers DOS interface

By Jacqueline Emigh
Staff Writer

SANTA CLARA, Calif. — The NTI Group recently unveiled a Unix System V protocol stack with a NETBIOS interface that will enable users to run MS-DOS local-area network applications over Unix.

The first implementation of the Network Basic I/O System for Unix is for The Santa Cruz Operation, Inc. (SCO) version of Unix System V, a version of the operating system for microcomputers.

The protocol stack allows DOS network applications written in C language to be ported conveniently to Unix and gives programmers a way of writing MS-DOS applications for use in Unix environments.

The product complements a NETBIOS for DOS protocol stack the company introduced in 1987, providing a consistent application interface for both environments and enabling Unix and DOS applications to share the same network. The new stack, available in source code as well as object code, can be used with a number of different physical-layer protocols, including Ethernet and token-ring LANs.

NTI President Tom McReynolds predicts that the bulk of customers for the product will be firms that have written proprietary applications for DOS and are now thinking that some of them may be suited for Unix.

NTI is talking with other Unix System V vendors that are interested in protocol stacks with a NETBIOS interface for their own versions of Unix.

The protocol stack for the SCO version is being beta-tested. Exact pricing has not been set, but the company said licensing fees are projected to fall into the $40,000 to $50,000 range.

For more information, contact NTI at 3265 Kifer Road, Santa Clara, Calif. 95051, or call (408) 739-2180.

Control module regulates TCP/IP, X.25 access to MVS

Users need PIN, smart card to log on to hosts.

By Jacqueline Emigh
Staff Writer

CAMBRIDGE, Mass. — Security Dynamics, Inc. (SDI) recently announced the ACM/6150, a software access control module designed to identify and authenticate users who are trying to access IBM MVS-based mainframes via X.25, Transmission Control Protocol/Internet Protocol or SNA Network Interconnection (SNI) links.

According to Jim Geary, vice-president of marketing and international, these multiprotocol capabilities set the ACM/6150 apart from SDI's other access control module, the ACM/6100, a product that supports Systems Network Architecture protocols.

> The ACM/6150 is compatible with most IBM MVS network management products.
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Able to serve as either a primary or secondary application, the ACM/6150 is compatible with most IBM MVS network management and protocol conversion products, as well as with third-party MVS applications.

The ACM/6150 module works in conjunction with SDI's SecurID system, a two-factor authentication system that combines a secret memorized password or personal identification number (PIN) with a SecurID card.

The microprocessor-based SecurID card has an LCD and uses a unique algorithm to produce a different number once every 60 seconds.

The software on the mainframe produces a similar algorithm. By means of time synchronization technology, the software is aware of the number on the card. When both the password or PIN and the SecurID number have been entered correctly, the module grants access to the system.

The module also provides access audit trails, which can be directly integrated into third-party or proprietary reporting programs.

Now available for domestic and international shipment, ACM/6150 carries a base price of $28,500.

For more information, contact SDI at 1 Alewife Center, Cambridge, Mass. 02140, or call (617) 494-1520.

Software enhances SunNet Manager tool

Intelligent Network Applications' NetMapper adds to capabilities of net management platform.

By Jacqueline Emigh
Staff Writer

MENLO PARK, Calif. — Intelligent Network Applications (INA) recently announced NetMapper, a tool that, when integrated with Sun Microsystems, Inc.'s SunNet Manager, provides enhanced change monitoring and increased flexibility in identifying and configuring net devices.

NetMapper adds to SunNet Manager the ability to locate all workstations, bridges, printers and other devices running on Simple Network Management Protocol or Internet Protocol nets.

When used in conjunction with Novell, Inc.'s LANtern product, the tool can also find devices that are supported by other protocols. These devices are automatically placed in SunNet Manager's configuration data base.

"NetMapper introduces users to an entirely new market," said INA President Glenn Maiden. "With the recent introduction of integrated network management platforms such as SunNet Manager, [Hewlett-Packard Co.'s] OpenView and DECmcc, users will now be able to purchase third-party tools that provide critical functionality for network operators."

INA's tool continuously monitors networks for changes in configuration, notifying operators when changes occur.

In addition, NetMapper contains a complete graphical user interface for editing SunNet Manager's configuration data base, or schema files, eliminating the need for manual editing of ASCII files. The graphical editing capabilities include point-and-click selection of icons, colors and data bases.

The NetMapper interface conforms to the OpenLook standard and can be supported on any X Window System terminal running OpenLook Window Manager.

The product also comes with a two-part rule base that is able to identify the types of devices on the system and tell the system where to place the devices within various maps, or subviews, of the network.

Software licenses are priced at $1,995 each, with an additional fee of $200 for support. INA offers the following discounts on purchases of multiple licenses: 15% for six to 10 licenses, 25% for 11 to 20 licenses, 35% for 21 to 40 licenses, and 45% for 41 or more licenses.

INA can be reached by writing to 1259 El Camino Real, Suite 236, Menlo Park, Calif. 94025, or by calling (415) 364-5282.

PopNet lets VINES users hot-key into net utilities

PICKERINGTON, Ohio — LANshark Systems recently announced PopNet, a software package that enables personal computer clients in Banyan Systems, Inc. VINES local-area networks to hot-key from applications into network management applications and other utilities.

The PopNet package is fully integrated with StreetTalk, the VINES integrated naming data base, and consists of two programs, PopNet and PopAdm, a version for net administrators.

Providing access to such standard VINES utilities as MAIL SETPRINT, SETDRIVE and CHAT, the PopNet program eliminates the need to exit an application to check for new messages, send mail, set network drive or printer assignments, or end a print job.

The PopAdm program lets users into Banyan's MNICK, MSERVICE, MUSER, MLIST, MMAIL, SETARL and OPERATE commands. VINES commands prefixed with an M enable users to manage such functions as nicknames and lists.

"Any two sites can be configured to be fully integrated, to connect by electronic mail or to not connect at all," said Scott Sharkey, president of LANshark.

When used together with Expanded Memory, the PopNet package uses 1,400 bytes of random-access memory. Without Expanded Memory, the memory requirement is 8K bytes.

A PopNet license costs $495 per server and $99 per user.

LANshark can be reached at 3000 Stone Mountain Drive, Pickerington, Ohio 43147, or call (614) 866-5553.

TELEPHONE EXCHANGES

BY BOB LEIPOW

Looking back at life in the far-off land of GEdney

Somewhere there must still be a GEdney. When I was growing up, my grandparents who lived five miles away from my home in Brooklyn, N.Y., resided in the land of GEdney. I lived in BEnsonhurst.

Their phone exchange was GEdney, GE-6, but GEdney was not the name of a street or neighborhood. Recently, I asked my father, "What did GEdney mean?" His bemused answer: "Nobody knew." Since the "tele" in "telephone" means "far off" in Greek, that is where I suppose my grandparents are today — in the far-off land of GEdney.

The name and flavor of GEdney came back to me recently. I hadn't thought of it for more than 25 years; and when I did, it triggered many memories. I mourn the loss of GEdney, a loss my children could never begin to understand.

Do you remember "PEnnsylvania-6-5000," the Glenn Miller swing-era tune? Another well-known exchange was BUtterfield-8, which became famous as the name of a movie starring Elizabeth Taylor. Also, in 1962, the Marvelettes' "BEechwood 4-5789" was popular. However, Wilson Pickett's 1966 oldie "634-5769" possessed only digits.

Parting with a piece of the past

In the early 1960s, at about the same time that we were memorizing our new zip codes, the Bell System started to phase out alphanumeric telephone exchanges, a process that took about 20 years and ended in 1979. Although the old exchanges were easier to remember, the new ones allowed for many more telephone numbers within a given area code.

Some Americans took this impending loss seriously. In fact, an Anti-Digit Dialing League formed to stop what it called the "cult of technology," but the wave of numbers washed over this organization.

Technology cannot quell the inventiveness of human beings though. Telephone numbers that spell out words, once crushed to earth, are flowering again. For example, there's 1-800-FLOWERS. With some ingenuity, companies and individuals have been able to transform an astonishing number of numeric combinations into words.

Other examples are (800) CASH-NOW, (800) US-BONDS, (800) HOLIDAY and (800) LOAN-YES. Then there's (800) EASTERN (Eastern Air Lines, Inc.), (800) DIAMOND (a jeweler with a local New York 800 number), (800) ALABAMA (the state's department of tourism), (800) EMBASSY (the Embassy Suites Hotel) and (800) USA-RAIL (owned by Amtrak).

Sometimes a number may have multiple meanings, which could increase its value. For instance, if you need the services of Guaranteed Overnight Delivery, you can call (800) DIAL-GOD. No doubt the same number is of interest to some church groups.

On the other end of the spectrum, there is evidence of criminal interest in telephone numbers that spell out words. In mid-November, the New York newspapers included a story about the drug arrest of an individual who reportedly promoted his wares using the phone listing (800) WANT-POT. If the alleged drug dealer had been arrested in Miami, he could have secured bail by dialing (305) FRIENDS.

My employer, AT&T, relies on word numbers too. A number of public phones are controlled by alternative operator service companies. To avoid them, you must prefix your call with "1-0-ATT" for AT&T's operator service, a procedure that resulted from the AT&T divestiture that changed our lives and put Ma Bell forever in the land of GEdney. ◼

Leipow, a network planning manager at AT&T, is back in the land of BE, where he was born. Although colleagues say his work phone exchange is 234, he insists that it is BEdminster-4.

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EDITORIAL

A special thanks to our supporters

At this time of the rolling year when many columnists are looking ahead to the coming months, we'd like to stop for a moment to thank the many people whose contributions have helped *Network World* become the leading voice of network users.

Since its introduction in March 1986, *Network World* has become the most useful and most important publication in the network field — a fact established by several editorial studies. Much of that success is attributable to the dedication and experience of the fine writers, designers, artists and editors who put together the newspaper each week.

But the staff of *Network World* couldn't achieve its mission of providing net executives with timely news and analysis without the expertise and insights of many other people in the networking community.

We'd like to offer a special thanks to the members of *Network World's* User Advisory Panel, whose names are listed on the masthead above. Panel members representing leading network users and professional associations have graciously offered us their opinions on a variety of topics.

Their viewpoints have provided not only good copy but, more importantly, have helped us to refine our editorial focus, making the publication more useful to our many other readers. The panel has been an invaluable sounding board for us to gauge our assumptions and beliefs to ensure that we are truly serving the best interests of our audience.

We'd also like to thank the many experts within the user, vendor, analyst and consultant camps who freely offer their time and knowledge to help us understand complex technical issues and convey them clearly and concisely to readers.

Thanks also to the sources within the industry and the user community who keep us informed of the latest news and trends. With their help, we keep you up to date on the issues shaping the network world.

But most of all, we thank our readers, whose support has made us the publication of choice among network executives. Your compliments, criticisms and feedback have helped us immensely throughout the years. Your willingness to share information about your networking strategies has enabled us to help other readers. We're pleased that you've made us a partner in your success.

In 1991, we're doubling our circulation to 150,000 to meet the growing demand for the publication. That demand stems from a pressing need for clear, business-oriented information about networking.

Thanks. We couldn't have done it without you. ◼

OPINIONS

DIXON ON-LINE

BY DIXON DOLL

The year ahead: changes and challenges in networking

The shaky domestic economy will be the No. 1 influence on 1991 networking budgets. Measures to downsize, cut costs, eliminate superfluous activities and deploy new applications that improve service quality will be users' top priority.

In addition, the pervasive migration of computer processing power to the work group and desktop will continue to fuel the migration of applications to a client/server architecture. The downsizing pioneers of the 1990s have proven the viability of this approach. Savvy users will outsource only tactical or noncritical functions that don't compromise the firm's competitive position.

Users in multinational firms will continue to consolidate data centers with an even greater emphasis on network availability and reliability. However, as this trend toward putting more computing "eggs" in fewer, bigger baskets persists, the exposure to critical network link failures will escalate.

Network and MIS executives must proactively understand the implications of network outsourcing. A knowledgeable organization with a strategic awareness of how applications provide competitive advantage can be crucial in preempting an unwanted outsourcing proposal from a major network integration specialist firm.

Domestic transmission costs hit bottom in 1990. But in 1991, international transmission costs should decrease as well, a trend that will accelerate as the artificially inspired constraints of the bygone monopoly era erode around the world.

Also, carriers will increasingly market network management offerings to differentiate commodity transport services. They will become much more aggressive in network outsourcing, offering on-site personnel, remote management and other services that reduce users' work force and capital equipment expenses.

Starting in 1991, the regional Bell holding companies will operate in a new regulatory environment inspired by price caps. The RBHCs will offer enhanced services such as voice mail and video transport, as well as integrated offerings that combine paging, voice mail and wireless data services. Also, expect initial Switched Multimegabit Data Service offerings for interconnecting local-area networks.

> Carriers will offer services that reduce users' work force and equipment expenses.
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Increased availability of switched 56K and 64K bit/sec services, both domestically and internationally, will spur dramatic growth in teleconferencing in 1991. Teleconferencing's ability to increase multilocation worker productivity, combined with air traffic congestion and the recent explosion in fuel prices, should make 1991 the year for that technology.

In the LAN arena, expect IBM to provide full-fledged support for all of its networking products over Ethernet LANs, as well as token-ring and Fiber Distributed Data Interface-based LANs. A similar strategy is likely to be employed by Digital Equipment Corp. as it begins to support networking applications in a token-ring environment.

Expect copious enhancements to the system management capabilities of the LAN leaders. Next year will probably be the flash point when users can no longer tolerate the problems arising from inadequate tools to inventory applications, data, procedures and other services distributed across dozens or hundreds of LANs.

The new year will also see initial meaningful attempts to support multimedia and image communications on user LANs and wide-area networks. End users will finally understand why the capacities of many current networks are woefully inadequate for image and multimedia applications.

Also expect initial deployment of next-generation WAN technologies, including frame relay, Synchronous Optical Network multiplexers and enhanced cross-connect systems during 1991.

Internetworking will still be hot in the coming year. New high-speed routers, hubs and multiport bridges will emerge. Increased congestion in excessively distributed computing networks will cause more investment in system administration tools as users reduce the number of stations per conventional Ethernet segment.

Integrated computer telephony applications will dramatically change the way organizations provide customer service. They will substantially enhance conventional automatic call distributor offerings.

Savings will result from lower network holding times, operator costs and port charges. However, these benefits will pale in comparison to the enhanced quality and service-level improvements that can also be achieved.

In spite of the weakening economy, innovative users willing to take a slightly longer term view will have many opportunities for success. However, those that don't may find themselves outsourced. ☒

Doll is a general partner of Accel Partners, a technology investment firm based in Princeton, N.J., with offices in San Francisco. He is also chairman of The DMW Group, Inc., a telecommunications architecture and network integration consultancy headquartered in Ann Arbor, Mich. He can be reached at his San Francisco office by calling (415) 989-2208.

TELETOONS

BY FRANK AND TROISE

The Future of Networking:
No.55
Oct. 14, 1992
A new 900 service goes on line across America. Called 900 USA-HOLD, it allows everyone on hold in the continental U.S. to talk to each other.
Hi! I'm Mary, on hold in St. Louis. I'm tall, blond, a Libra, enjoy hiking, ethnic foods..

LETTERS

Cooperative solutions

Your recent article about a client/server computing survey ("Survey: Client/server computing on a roll," *NW*, Nov. 19) quotes an industry analyst who implies that the only way to achieve user friendliness on the mainframe is to move host-based applications to a client/server architecture.

However, such friendliness can also be attained today through a different implementation of a cooperative processing architecture, which is the basis for client/server computing.

Applied in a traditional mainframe 3270-oriented computing environment, cooperative processing harnesses the power of personal computers — for example, pull-down menus, on-line help, color and point-and-click — to add value to the presentation portion of a host-based application. This leaves the existing mainframe application unchanged in its handling of the processing and data retrieval tasks.

In this way, users get the friendly look and feel of their personal computer or Macintosh and the company doesn't have to invest in porting mission-critical, host-based applications to a new server platform.

Client/server computing clearly will be important in the 1990s. But it is not the only alternative for creating effective information processing solutions.

In fact, for many organizations with a hefty investment in mainframe hardware and software, finding new and better ways to leverage those resources through a variety of cooperative processing implementations might be the most "bottom line-friendly" solution of all.

Christopher Fedorko
Vice-president of marketing
Simware, Inc.
Ottawa

Network World *welcomes letters from its readers.*

Letters should be typed and double-spaced. Mail them to Editor, Network World, *161 Worcester Road, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

ON THE 12TH DAY OF CHRISTMAS, my true love gave to me: a network with 100% uptime! If you've received any unusual holiday gifts, tell *Network World* all about it in a column.

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If you'd like to write a column, call Alison Conliffe, assistant features editor, at (508) 820-7416 or fax your idea to us at (508) 820-3467.

X.500
SNMP
international
virtual network
LAN

Curtain rising on new technologies

CONTINUED FROM PAGE 1

son, *Network World* asked scientific researchers, consultants and industry analysts to look into their crystal balls and predict the important technical developments and service trends of 1991.

We focused on six technologies that will make a network manager's job easier. Two technologies — X.500 and international virtual networks — will make it easier to send messages between networks.

Two other technologies — Simple Network Management Protocol (SNMP) and expert systems-based network management — will make it easier to manage networks. Standards in benchmark testing will make it easier to identify potential bottlenecks in networks. And FDDI-II, the latest ramification of the fastest of standard LANs, will add new capabilities to an increasingly popular new networking technology.

Technologies and trends that wait in the wings for 1991

FDDI-II

Why is the Fiber Distributed Data Interface so popular? Because of its high speed alone. The need to interconnect slower speed LANs is making FDDI's 100M bit/sec data transfer rate extremely attractive.

Nets based on FDDI-II, an emerging ANSI standard, will accommodate circuit-switched traffic in addition to the packetized data specified in the original FDDI standard.

An FDDI-II network offers the same capabilities for high-speed transfer of LAN traffic as FDDI does, but it can also transmit time-sensitive — or in the terminology of the standard, isochronous — traffic, which includes real-time voice traffic, equipment control or time-sensitive host-to-terminal traffic.

Here's what the experts had to say about FDDI-II:

Bruce McClure, chairman of ANSI's X3T9.5 FDDI-II working group and chairman and executive vice-president of Synernetics, Inc., a Billerica, Mass., manufacturer of FDDI equipment and station management software:

"FDDI-II does not replace the FDDI standard; rather, it augments it by specifying how to access the fiber ring. The main enhancement to the original standard is commonly called hybrid ring control, which describes how the FDDI-II ring works and how it multiplexes the packet data service with the isochronous data service.

"FDDI-II has a very good chance to

(continued on page 22)

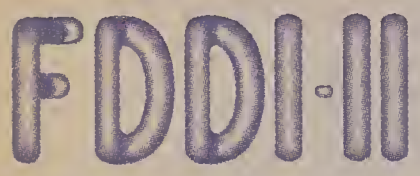
Salamone is Network World*'s features writer.*

ILLUSTRATION ©1990 CAROL O'MALIA

(continued from page 21)

make big strides in 1991. The document for [hybrid ring control] is largely complete. So it's largely on its way.

"In 1991, we'll see station management for FDDI-II under development. Hopefully, having established the precedent with FDDI-I, we won't have the same slowdown we had with FDDI-I. I'm optimistic."



Emily Green, director of product management at Fibermux Corp., a Chatsworth, Calif., fiber-optic systems vendor. Green is also an official observer for Fibermux at the FDDI-II meetings:

"In 1991, we will see the standards starting to be firmed up for FDDI-II. For a user to deploy a network based on FDDI-II, a couple of things, besides the standard being finalized, have to happen. Once HRC as a component is finished, all four standards [physical medium dependent, physical protocol, media access control and station management] within the original FDDI standard have to be upgraded to accommodate FDDI-II.

"Two of the update efforts, PHY-2 and MAC-2, are well under way, and they are entering letter balloting now. In 1991, PMD-2 and SMT-2 will get started."

X.500

The X.500 standard, the directory services part of X.400, was approved in 1988. A few products that support the standard are on the market, and many more are likely to be introduced in 1991.

Besides product introductions, international and North American standards bodies are expected to make great strides in 1991 on drafting a revised version to the X.500 standard. This is expected to be completed in 1992.

This is what the experts have to say about X.500:

Richard Miller, chairman of the Electronic Messaging Association, and president and chief executive officer of Rapport Communication, Inc., an electronic messaging consulting firm located in Palo Alto, Calif.:

"In 1991, the CCITT and the [International Standards Organization] working groups that are using the 1988 version of X.500 as a starting point will have to complete their revamping and enhancing of the technical standard.

"The reason: By the fall of 1991, the formal draft recommendations need to be circulated to the parties in the international standards community for their final approval by the CCITT in the 1992 plenary session.

"1991 will see the first production-quality products and services that adhere to X.500. However, for the most part, those will be restricted to using the directory access protocol.

"In 1991, many of the pragmatic issues that need to be resolved in sharing directory information will be addressed and hopefully resolved by the North American Directory Forum and its counterparts.

"What the forum will be able to do is come down very clearly on approaches to registration and knowledge sharing [or what one user's directory is allowed to know about the directory information kept in another's proprietary directory]. "When these pragmatic issues are resolved, it will remove the impediments that prevent directories from talking to one another."

Daniel Blum, president of OSI Migrations, an education and consulting company in Takoma Park, Md.:

"During 1991, the 1992 recommendations for X.500 will be finalized. The standard will contain recommendations for replication and access control, which will be the most important enhancements.

"One outstanding problem, which the directory forum is trying to resolve, is how to map the X.500 hierarchical, global information models onto reality — how to get carriers to interconnect and share routing information so that we have a seamless service.

"We won't see that directory evolve in 1991. But we will see the first tentative steps toward the carrier agreements or the framework upon which such agreements might rest."

John Stephensen, senior vice-president of technology at Retix, a leading supplier of Open Systems Interconnection-based products located in Santa Monica, Calif.:

"In 1991, we'll see some of the first demonstrations of [X.500] products. But in terms of services, I wouldn't expect any public X.500 services until at least the following year.

"As far as companies looking to develop products, the ISO version is now at the draft proposal stage, so there is technical information becoming available, which you can use to do your development as long as you're willing to track changes that are going to occur.

"In terms of the standard, the technological issue is replication, which allows you to place portions of the data base in multiple locations to minimize cost and improve access time. This issue should be resolved in 1991."

SNMP

SNMP was developed by the Internet Engineering Task Force, the same organization that developed Transmission Control Protocol/Internet Protocol. While SNMP has been used mainly in TCP/IP networks, users are beginning to adopt it in other situations.

For example, SNMP is starting to be used more often in the management of elements, providing a standards-based means for communications between network elements and element management systems.

In addition, some vendors will introduce SNMP interfaces between element management systems and integrated or enterprise network management systems in 1991.

Here's what the experts have to say about SNMP:

Paul Li, a manager at the network consulting practice of Ernst & Young in Vienna, Va.:

"SNMP is definitely turning into the de facto standard for TCP/IP networks. TCP/IP will continue to grow next year, and that will drive more SNMP communications.

"SNMP provides the foundation for different proprietary element management systems to communicate to centralized net management systems. That's one of the key things.

"In 1991, more vendors will support SNMP. You'll also see element management systems that will be able to communicate directly to integrated network management systems, as well as devices communicating directly to integrated systems with SNMP.

"SNMP has already grown significantly in the past year, and it will continue to grow in the next 1½ to two years. This growth will happen even though OSI-based network management [Common Management Information Services/Common Management Information Protocol] will be around in about two years."

Jerry McDowell, vice-president of communications consulting and director of educational services with the META Group, a consulting firm in Westport, Conn.:

"In 1991, we'll find many large vendors — like IBM, DEC, Hewlett-Packard Co., NCR Corp. and others — accepting SNMP because their users demand it. These vendors will incorporate SNMP into their management structures.

"The most important event in 1991 — I'd guess there's an 80% chance that this will happen — is that the Network Management Forum will put its stamp of approval on SNMP. I think to have any credibility with the end-user base, the forum is going to have to do that.

"Any user who manages LANs and remote LANs will consider SNMP because there really isn't anything else. It's a given that those who want to integrate LAN management and remote LAN management into their existing structure are going to use SNMP."

James Herman, principal with Northeast Consulting Resources, Inc., a Boston-based consulting collaborative:

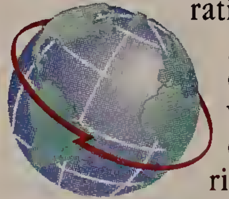
"SNMP will begin to move from monitoring only to a mixture of monitoring and control in 1991. We will see an expansion in the standard [Management Information Base], and we will see the adoption of MIB-2.

"We'll see the incorporation of SNMP variables into CMIP MIBs. If you have a management system that has been built to handle the more general CMIP-type objects, that management system will be able to ask for the simpler SNMP variables as well. We'll see products such as these in 1991.

"An interesting product will emerge in 1991 — one that speaks SNMP to bridges and routers, and speaks CMIP to a more integrated manager. We'll also see intermediaries that bridge the gap between SNMP managers and CMIP managers. We'll also finally see CMIP in the market."

International virtual nets

Telecommunications is adapting to the age of the global corporation with the growing number of international virtual network offerings by carriers. International virtual nets allow users to obtain uniform telecommunications features across international borders.



In addition, users of international virtual nets have common network management functions that, in the past, they'd get only if they had their own private network. Besides more carrier offerings, there are more applications — teleconferencing and videoconferencing, for example — that will make international virtual networks more popular in 1991.

This is what the experts have to say about this trend:

Jeff Close, president of Tri-Quad Enterprises, a Glastonbury, Conn., consultancy:

"International virtual networks will begin to come of age in 1991. There will probably be a lot of shops that will put their attention on converting their international arena into their virtual networks.

"And 1991 will be the year that general end users are going to realize virtual nets. To date, virtual net users have been either large companies — the Fortune 50, for example — or companies where it made sense because of the nature of their business — where a company had heavy international traffic.

"In 1991, companies in the Fortune 50 to 500 range will probably pay more attention to international virtual nets. And companies that already use international virtual nets will use them more because the feature list is growing."

Daniel Briere, president of TeleChoice, Inc., a Montclair, N.J., telecommunications consultancy:

"I think 1991 is going to be the year of the international virtual network. By the end of the year, users will see carriers in at least 10 foreign countries active in international virtual networks.

"In addition, many domestic carriers will come out with services.

"In 1991, international ISDN will truly take off. And that's the link to the growth in international virtual network services because ISDN is the enabling access to such networks."

AI-based net management

As networks grow in size and complexity, the demands on net managers also grow. In addition, the shortage of skilled workers makes the network manager's job even more difficult.

These developments have sparked interest in expert systems-based and artificial intelligence-based network management systems. Some of these types of systems are starting to reach the market, and 1991 will see some new developments in this market.

Here's what the experts say about AI network management:

Ronald Muns, chairman of the Help Desk Institute and president of Bendata Management Systems, Inc., a Colorado Springs software firm that designed the Help Desk Automation Tool (HEAT) for a consortium of user companies:

"The Help Desk Institute has gone from nothing to over 1,000 help desk sites in less than two years. We see the help desk becoming the hub for monitoring and correcting problems in a data center.

"People now see the help desk as a strategic advantage — if it can make people more productive, it is easy to justify.

"One of the catch phrases with expert system-based help desks is 'automating the redundant.' You can now let your expert people work on the more complex issues, such as identifying strategic changes that can take place in the organization to eliminate defects and make people more productive.

"According to our research, less than 10% of experienced help desk personnel are [using] expert systems, and over 50% say they intend to do so in the next 18 months.

"The interest is there, and it has come on strong."

Mark Luczak, senior net-

work specialist at Infotron Systems Corp. in Cherry Hill, N.J., a manufacturer of intelligent switching systems, network processors and multiplexers:

"Given the trying economic times that everyone seems to be anticipating for next year, as well as the cost and complexity of expert systems, I think using AI-based network management is going to be prohibitively expensive.

"What we are seeing more interest in right now is just enhancing or building on what users already have.

"If you make a commitment to an expert system in 1991, you've still got too many pieces of equipment from too many vendors. You are going to have to make a serious effort to get them all integrated into an expert system.

"For 1991, I expect that people will look to enhance the things they have, rather than trying to rethink the whole net management strategy into an expert system-type format."

Standard benchmarks

Performance testing continues to be an area of intense activity. Several industry-wide organizations formed in the past few years are trying to develop suites of benchmark tests for the user community.

Activity in 1991 is expected to continue, but the groups will have to start delivering on their promises soon to remain credible with users.

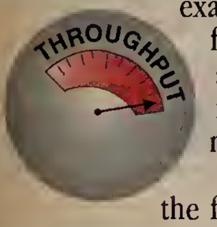
Here's what the experts say about developments on standard benchmarks:

Neal Nelson, president of Neal Nelson and Associates, a Chicago software house specializing in performance measurement tools:

"In 1991, we will see more emphasis on the use of remote terminal emulation [RTE] in benchmark performance tests published by magazines and trade journals.

"RTE benchmarks are more difficult to use than the more common batch-mode benchmarks, but they can be used to drive actual applications.

"By testing the network using application programs — word processing, spreadsheets and data base programs, for example — to generate traffic, the benchmark results are more believable than results from batch benchmarks.



"In 1990, we witnessed the flowering of a number of nonprofit industry benchmarking groups such as the Transaction Processing Council and the System Performance Evaluation Co-operative.

"These and other similar groups have achieved significant name recognition, but their technical accomplishments have been somewhat limited — 1991 might be the judgment year for these industry groups."

Ed Curry, president of Lone Star Evaluation Laboratories, Inc., a Georgetown, Texas-based component and LAN testing lab:

"The industry is going to start to work in a cooperative manner; the Performance Testing Alliance is an example of such cooperative efforts.

"We should start to see end users becoming involved in setting the industry benchmarking standards in 1991.

"In 1991, the role of industrywide benchmarking efforts, such as the [Performance Testing Alliance], is analogous to the railroad system: We have the end users coming from one end and saying what they want to see in benchmark tests, and we have the vendors coming from the other end saying what they want to see. We have to guide this so that both groups meet at a point where everyone's needs and expectations can be filled, drive a gold spike and join them.

"The current stage of the benchmark effort is that the first ties have been laid by both sides. Perhaps a first spike has been driven into the tie."

What's ahead

Prophets of technological change are often overly optimistic, setting dates for occurrences that often happen later than they originally thought. Nevertheless, on the basis of the discussions above, it is likely that network managers can look forward to some important technical innovations next year.

Integrated net management

Particularly important in this regard is SNMP. Many vendors see it as the quickest way of bringing about integrated network management.

Increasingly complex networks cannot be managed in the same old ways. For this reason, the need for expert systems in network management is likely to be here for the long run. We may see many innovations in 1991 — but even more will come in 1992.

FDDI-II can be exciting in some applications, but it is not clear what voice/data products will emerge quickly.

Nevertheless, the technology will be important in time-sensitive networks such as in manufacturing. International virtual nets will be increasingly popular in 1991. And developments in X.500 will finally move toward more directory services offerings.

Taken together, what will these many expected innovations bring?

Probably progress.

As the standards and technologies discussed above come into existence and move on into issued products, net managers are going to have more tools at their disposal to manage their nets, link their networks with other nets, test network performance and combine voice, data and image traffic over one high-speed backbone. ◼

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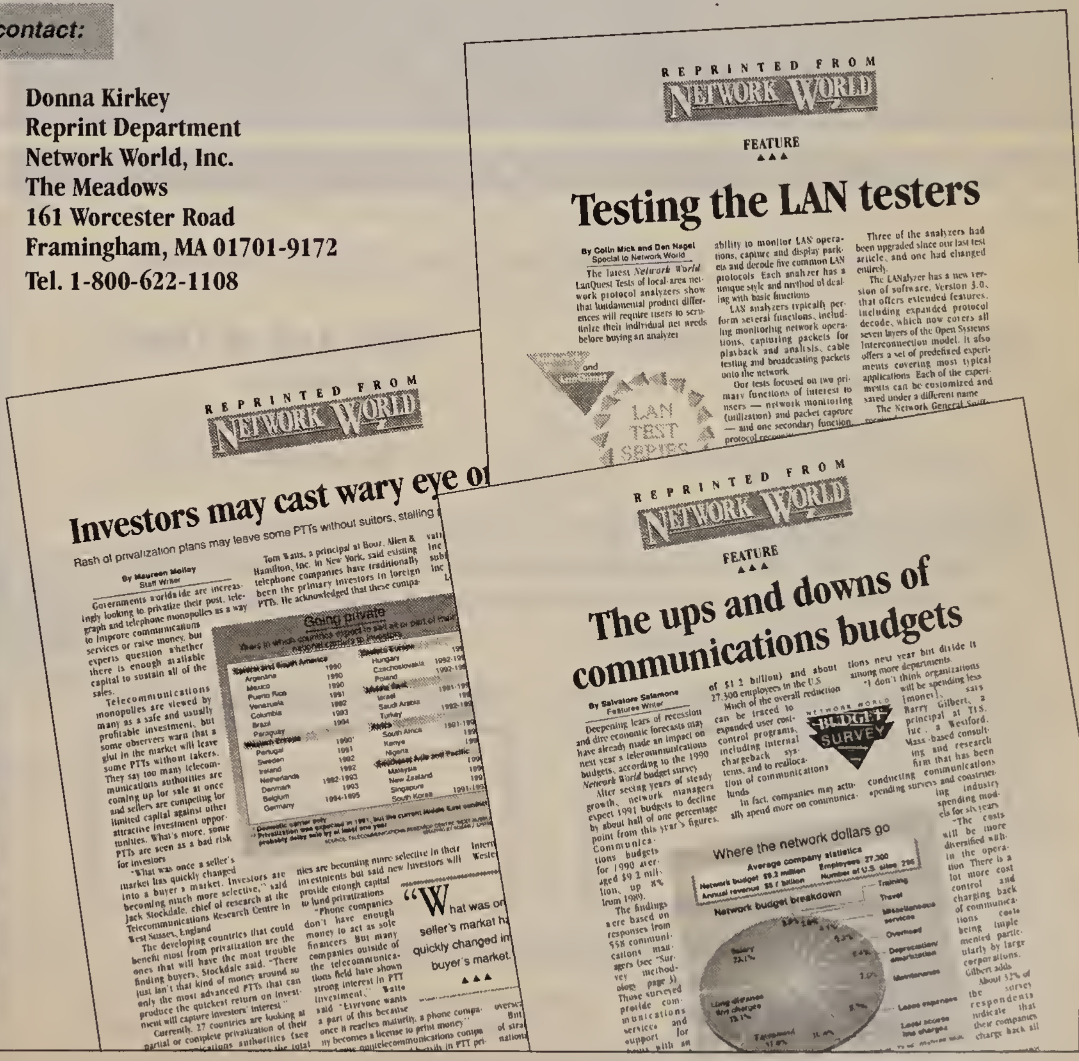
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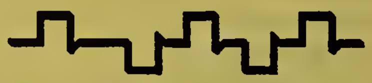

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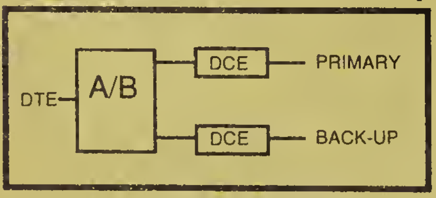

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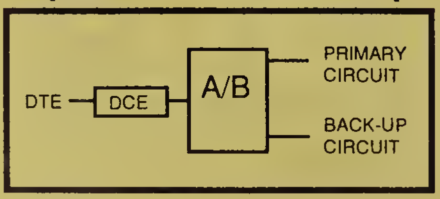

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1 Industry: (check one only)

01. ☐ Manufacturers (other than computer/communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
08. ☐ Retail/Wholesale Trade
09. ☐ Transportation
10. ☐ Utilities
11. ☐ Education
12. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
13. ☐ Government State/Local
14. ☐ Government Federal
15. ☐ Military
16. ☐ Aerospace
17. ☐ Consultants (independent)
18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/Systems House
22. ☐ Distributor, Computer Related
23. ☐ Distributor, Communications Related
24. ☐ Other ____________________

2 Job function: (check one only)

1. ☐ Networking Management (Responsible for both voice & data)
2. ☐ MIS Management (VP, Dir., Department Head)
3. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
4. ☐ Data Communications Management (Responsible for data only)
5. ☐ Telecommunications Management (Responsible for voice only)
6. ☐ Financial Management
7. ☐ Engineering Management
8. ☐ Consultant (Independent)
9. ☐ Other ____________________

3 What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check one only)

1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
2. ☐ Multi Enterprise (Consultants)
3. ☐ Department Wide

4 What is the total number of sites for which you have purchase influence?

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1

5 Your primary responsibility: (check one only)

1. ☐ Both Data + Voice
2. ☐ Data Networking Only
3. ☐ Voice Networking Only
4. ☐ None

6 Which transmission media do you use in your network: (check all that apply)

Public:
01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
02. ☐ Leased Line (not including T-1)
03. ☐ T-1
04. ☐ Fractional T-1
05. ☐ T-3/SONET
06. ☐ Broadband
07. ☐ ISDN

Private:
08. ☐ Satellite
09. ☐ Microwave
10. ☐ Fiber Optic

7 Is your network: (check all that apply)

LOCAL AREA NETWORK
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

8 What is your network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ TCP/IP
7. ☐ DCA (UNISYS)
8. ☐ OTHER ____________

9 What is your LAN Operating System? (check all that apply)

01. ☐ 3COM (3+, 3+open)
02. ☐ LOCAL TALK (APPLETALK)
03. ☐ BANYAN (VINES)
04. ☐ DCA (IRMALAN)
05. ☐ IBM (LAN Server)
06. ☐ IBM (PC LAN PROGRAM)
07. ☐ MICROSOFT (LAN MANAGER)
08. ☐ UNGERMAN BASS (NET/1)
09. ☐ NOVELL (NETWARE)
10. ☐ TOPS
11. ☐ PROTEON (PRONET)
12. ☐ OTHER ____________________

10 What is your LAN environment? (check all that apply)

1. ☐ 4M TOKEN RING
2. ☐ 16M TOKEN RING
3. ☐ ARCNET
4. ☐ ETHERNET
5. ☐ STARLAN
6. ☐ FDDI
7. ☐ LOCALTALK
8. ☐ OTHER ________

11 Which operating systems do you utilize? (check all that apply)

1. ☐ IBM DOS (VSE)
2. ☐ UNIX
3. ☐ OS/2
4. ☐ OS/2 Extended Edition
5. ☐ MVS
6. ☐ VM
7. ☐ VMS
8. ☐ XENIX
9. ☐ PICK
0. ☐ OTHER ______

12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. BULL HN IS		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

13 Please indicate by vendor the number of microcomputers/workstations:

A. Presently installed in your network.

B. The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. PCs based on 80286 chip		
02. PCs based on 80386 chip		
03. PCs based on 80486 chip		
04. 8086/8088		
05. Macintosh		
06. RISC-based workstations		
07. UNIX-based workstations		

14 What is your planned PC standard? (check all that apply)

1. ☐ EISA
2. ☐ MCA
3. ☐ NUBUS (MACINTOSH)

15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

16 Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:

B) I plan to purchase the following products/services in the next 12 months:

Presently Involved A	Plan to Purchase B	
A	B	LOCAL AREA NETWORKS:
01. ☐	☐	Local Area Networks
02. ☐	☐	LAN Servers
03. ☐	☐	LAN Services
04. ☐	☐	Cables, Connectors, Baluns
05. ☐	☐	Bridges, Routers, Gateways
06. ☐	☐	UPS
07. ☐	☐	LAN Storage Devices
A	B	COMPUTERS/PERIPHERALS:
08. ☐	☐	Micros
09. ☐	☐	Minis
10. ☐	☐	Mainframes
11. ☐	☐	Front End Processors
12. ☐	☐	Terminals
13. ☐	☐	Laptops
14. ☐	☐	Printers
15. ☐	☐	Work Stations
16. ☐	☐	Cluster Controllers

(continued on next column)

Presently Involved A	Plan to Purchase B	SOFTWARE:
17. ☐	☐	Network Management
18. ☐	☐	Micro to Mainframe
19. ☐	☐	Network Security
20. ☐	☐	Call Accounting
21. ☐	☐	Distributed DBMS
22. ☐	☐	Communications Software
23. ☐	☐	Applications Software
24. ☐	☐	Network Operating Systems Software
25. ☐	☐	EDI Software
26. ☐	☐	E-Mail Software
A	B	DATA COMMUNICATIONS:
27. ☐	☐	Modems (over 9.6kbps)
28. ☐	☐	Modems (under 9.6kbps)
29. ☐	☐	T-1 Multiplexers
30. ☐	☐	T-3 Multiplexers
31. ☐	☐	Fractional T-1 Multiplexers
32. ☐	☐	Data Switches
33. ☐	☐	Matrix Switches
34. ☐	☐	Packet Switches
35. ☐	☐	Protocol Converters
36. ☐	☐	Network Management Systems
37. ☐	☐	Terminal Emulation Boards
38. ☐	☐	Facsimile Machines
39. ☐	☐	Diagnostic Test Equipment
40. ☐	☐	DSU/CSU
41. ☐	☐	Data Security
42. ☐	☐	Data Compression Equipment
43. ☐	☐	Network Adapter Boards
44. ☐	☐	Microwave
45. ☐	☐	Messaging Software
A	B	TELECOMMUNICATIONS:
46. ☐	☐	PBXs (over 1000 lines)
47. ☐	☐	PBXs (200 - 1000 lines)
48. ☐	☐	PBXs (under 200 lines)
49. ☐	☐	Key Systems
50. ☐	☐	Automatic Call Distributors
51. ☐	☐	Voice Messaging Systems
52. ☐	☐	Video Teleconferencing Systems
A	B	SERVICES:
53. ☐	☐	Switched Voice
54. ☐	☐	Dedicated Leased Line
55. ☐	☐	T-1
56. ☐	☐	T-3
57. ☐	☐	Digital Data
58. ☐	☐	Packet Switched
59. ☐	☐	Centrex
60. ☐	☐	Central Office Lan
61. ☐	☐	Satellite
62. ☐	☐	On-Line Information
63. ☐	☐	ISDN
64. ☐	☐	EMail
65. ☐	☐	VSAT

17 Estimated value of networking equipment and services:

A: Which you helped specify, recommend or approve in the last 12 months?

B: Which you plan to help specify, recommend or approve in the next 12 months?

A	B
1 ☐	☐ $100 million and over
2 ☐	☐ $50 - $99.9 mill
3 ☐	☐ $25 - $49.9 mill
4 ☐	☐ $20 - $24.9 mill.
5 ☐	☐ $10 - $19.9 mill.
6 ☐	☐ $5 - $9.9 mill.
7 ☐	☐ $1 - $4.9 mill.
8 ☐	☐ $500,000 - $999,999
9 ☐	☐ Under $500,000

18 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill.
3. ☐ $500 to $1 bill.
4. ☐ $100 to $499.9 mill.
5. ☐ $50 to $99.9 mill.
6. ☐ $10 to $49.9 mill.
7. ☐ $5 to 9.9 mill.
8. ☐ under $5 mill.

19 Estimated number of employees for your entire corporation:

1. ☐ over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ under 500

20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

1. ☐ Basic Rate Interface Terminal Adapters
2. ☐ Primary Rate Interface Equipment
3. ☐ Voice/Data terminals
4. ☐ Voice-only terminals
5. ☐ Data-only terminals

21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A PBX	B COS	
A ☐	☐	AT&T
B ☐	☐	ALCATEL
C ☐	☐	ERICSSON
D ☐	☐	FUJITSU
E ☐		HARRIS
F ☐		HITACHI
G ☐		ROLM
H ☐		INTECOM
I ☐		MEMOREX TELEX
J ☐		MITEL
K ☐	☐	NEC
L ☐	☐	NORTHERN TELECOM
M ☐		SAMSUNG
N ☐	☐	SIEMENS
O ☐		STROMBERG-CARLSON
P ☐		TOSHIBA
Q ☐	☐	OTHER ____________

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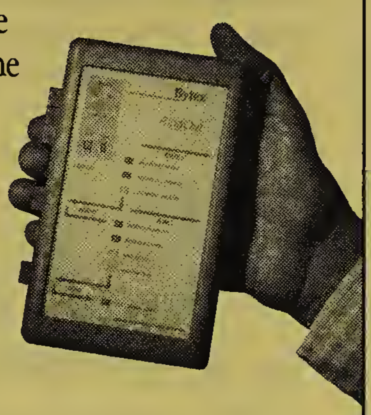

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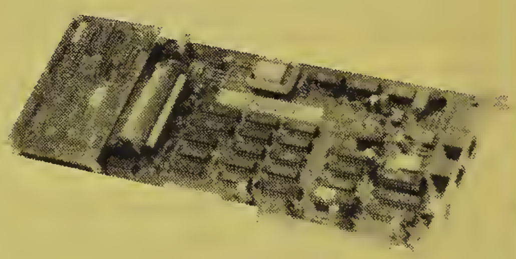

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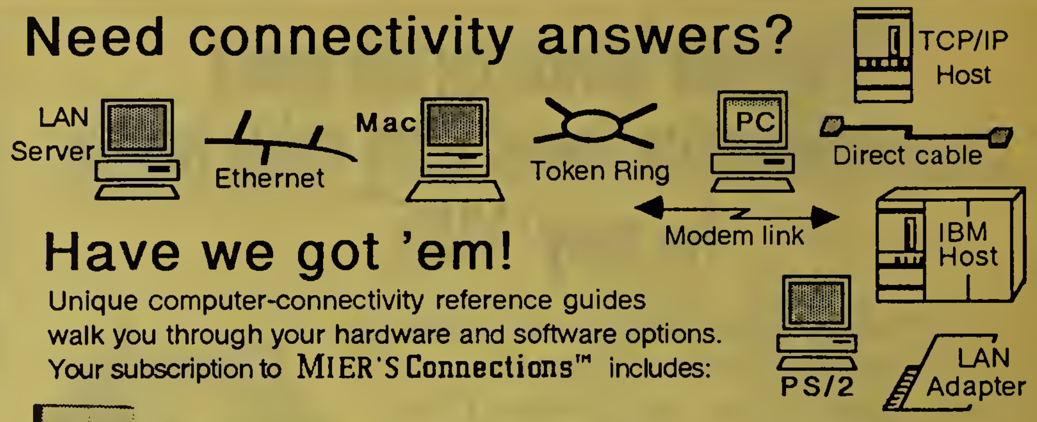

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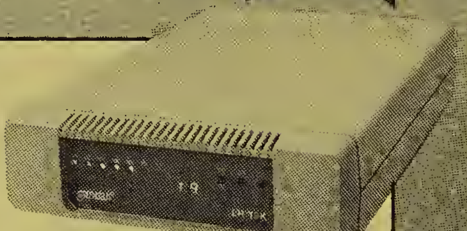

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T-1

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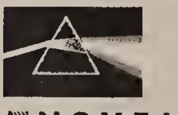

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IBM's price plan cuts costs

continued from page 2

IBM revamped Version 2 pricing because it originally overestimated demand for the distributed option, according to Bill Warner, director of network management in IBM's Communication Systems division.

Customers were more interested in the centralized option, he said.

The Central System Option includes operator interface software and NetView-to-NetView communications. IBM envisioned customers employing the option on a few mainframes used to control other systems running the Distributed System Option, which also supports NetView-to-NetView communications but does not support an operator interface.

But that didn't happen. Many users said they were not ready to centralize control of their networks in one or two locations. They wanted the ability to control each NetView locally as well as ship data among multiple NetViews.

Consequently, they needed numerous copies of the centralized NetView option and were upset at how much they would have to pay for them.

To appease those users, IBM dropped the Central System Option price for mainframes in Model Groups 30 and above. The cuts bring the price of the central option down almost to where the Standalone System Option was. With the new plan, the standalone version is now simply offered as a configuration option under the centralized version, Warner said.

The NetView Version 2 Central System Option price cuts get progressively deeper as they go up the product line.

Biggest cuts at high end

Model Group 30 software for MVS/ESA, for example, was cut from $81,700 to $69,290, while software for the high-end Group 80 was cut from $453,500 to $163,400, a reduction of more than 60%.

Percentage-wise, the same size cuts apply to the Distributed System Option.

Conversely, prices that were increased under the new plan get progressively higher as the mainframes get smaller. MVS/ESA Model Group 29 mainframe users, for example, will see an increase of less than 1% over the September prices. Users of mainframes in the low-end Model Group 18, however, are now being asked to pay $43,030, compared to the $22,000 price announced in September, a hike of nearly 50%.

In all cases where the price was raised, the new price is about equivalent to what users were paying for Version 1, according to Ken Siedler, director of network product marketing for IBM's U.S. marketing and sales group.

Now for the same price, they get Version 2 enhancements including the graphical interface, support for LU 6.2 and enhanced automation and local-area network management features, he said.

In addition, IBM is offering an incentive for those customers that are facing a higher price in any model group as a result of last week's price changes.

If Version 2 is installed by June 30, users will pay the price announced in September for all of 1991. After June 30, the price that was announced last week will apply.

None of the scheduled NetView availability dates have changed since September.

NetView Version 2 Release 1 for MVS/ESA and MVS/XA is due out Dec. 31. Version 2 Release 2, which adds the LU 6.2 support and automation features, is scheduled for availability on Sept. 30 for the same operating systems.

Version 2 Release 2 will be available Dec. 31, 1991, for VSE and on March 31, 1992, for VM/ESA and VM.

A win for users: IBM revamps NetView pricing

Mainframe	System type	Number of licenses	Unit price			Volume price		
			Version 1	Version 2		Version 1	Version 2	
				Sept. 5	Dec. 18		Sept. 5	Dec. 18
Example 1: MVS/XA								
3090 30E	Stand-alone	1	$1,580	$2,120	$2,010	$1,580	$2,120	$2,010
Example 2: MVS/XA								
3090 60J	Central	1	$1,905	$5,760	$2,675	$1,905	$5,760	$2,675
3090 15J	Distributed	2	$1,580	$1,395	$1,285	$2,370	$2,093	$1,928
4381 91E	Distributed	2	$1,435	$552	$878	$2,153	$828	$1,317
					Total:	**$6,428**	**$8,681**	**$5,920**
Example 3: MVS/ESA								
3090 60J	Central	2	$2,120	$6,045	$2,815	$3,710	$10,579	$4,926
3090 18J	Distributed	5	$1,585	$1,680	$1,490	$5,944	$6,300	$5,588
3090 15J	Distributed	5	$1,500	$1,465	$1,350	$5,625	$5,494	$5,063
					Total:	**$15,279**	**$22,373**	**$15,577**

New NetView Version 2 prices announced last week offer relief from prices announced Sept. 5. A discount for users that install Version 2 by June 30 could mean even bigger savings than shown for users of some low-end mainframes.

GRAPHIC BY SUSAN J. CHAMPENEY

SOURCE: IBM, WHITE PLAINS, N.Y.

AT&T signs two Tariff 12 deals

continued from page 3

on Software-Defined Network service Expanded Volume Plan rates. The bank must sign up for a three-year term and a minimum usage level of 6 million minutes per year. AT&T said the deal is in response to an off-tariff discount being offered to State Street Bank by US Sprint Communications Co.

In its Tariff 15 deal for Kentucky Christian College in Grayson, AT&T said it will waive installation and some recurring charges for three years on T-1 lines in exchange for a three-year commitment to AT&T Megacom service. Monthly charges will be waived for June, July and August in 1991, 1992 and 1993.

AT&T said this offer is in response to a deal MCI Communications Corp. offered the college.

AT&T said it will sell either of these deals to any other customer that can show that a rival carrier has made a similar offer.

AT&T has had great difficulty being able to deliver customer-specific discounts offered under Tariff 15. Because the Communications Act of 1934 forbids carriers from discriminating among customers, many feel that allowing AT&T to single out customers for special deals is illegal.

But AT&T claims that its rivals offer customer-specific discounts and it must be allowed to do the same in order to compete.

Out of 11 deals filed since 1988, only two have taken effect — one for Resorts Condominium International, Inc. and one for both CBS, Inc. and Shawmut Bank, N.A. CBS switched to MCI before the deal became effective.

Some speculate that the FCC is stalling a decision on Tariff 15. Many, including Estey, believe that the FCC wants to decide the question of customer-specific discounts in the context of a larger proceeding examining the dominance of AT&T in the long-distance marketplace.

Estey expects that proceeding to be completed in the first quarter of 1991. He said he is confident that the outcome of that investigation will clear away all questions about the legality of Tariff 15 deals.

3Com clouded by confusion

continued from page 4

and LAN reseller, said news of 3Com's diminishing role in the operating system business should not come as a surprise.

"3Com wasn't in the operating system business anyway; they were a LAN Manager OEM," he said. "What is really going on here is that Microsoft is bringing itself back together with the community of LAN Manager OEMs to establish one version of LAN Manager."

Still, 3Com has left most people guessing.

"If 3Com strikes a deal with Microsoft, I would bet they would get out of the software business over time," said Paul Johnson, a vice-president at Needham & Co., a New York investment firm. "There are definitely big-time discussions going on with the boys in [Redmond, Wash.]."

Craig Burton, chief executive officer of Clarke Burton Corp., a Salt Lake City consulting firm, said 3Com plans to get out of a financial commitment to LAN Manager, which has never been a big money maker. "It's becoming pretty well known that 3Com plans to drop LAN Manager 2.0 as a product," he said.

3Com officials estimated that 3+Open sales account for less than 10% of the company's overall sales, although they said 3Com leads other LAN Manager vendors in market share.

Industry observers said Microsoft's entrance into the LAN Manager market earlier this year with its own shrink-wrapped version of the product may have convinced 3Com to withdraw.

3Com's LAN Manager efforts have been fraught with problems, said Doug Gold, an analyst at International Data Corp., a Framingham, Mass., market research firm. The initial version of the product had problems, and the next version was hurt by its predecessor's reputation.

"3Com has fallen flat on its face in the network operating system market," Gold said.

According to Gold, 3Com would be wise to exit the operating system market and focus on what it does best, network adapter cards and other communications hardware.

"3Com's chances for long-term financial stability are much better based on hardware than on a software and hardware mix," he said.

Amidst speculation that 3Com could exit the network operating system business, 3Com's Thermond said it is important to recognize that "we do some other things for a living" besides sell 3+Open.

Retail nets slow down for season

continued from page 2

season, Broman said his department has been taking "snapshots" of the traffic running over the network to make sure it can support the holiday load, including credit card authorizations. Target's telecommunications staff also makes sure all backup dial-up facilities are in order, he said.

"We are configured all year-round to handle peak traffic on the network," Broman said. "We just like to check at this time of year to make sure the network is operating properly."

That's critical since as much as 30% of the company's business is conducted during the six-week period leading up to Christmas Day, Broman said.

Garry Johnson, assistant vice-president of corporate telecommunications at Ames Department Stores, Inc. in Rocky Hill, Conn., said his company employs a similarly conservative strategy around the holidays.

"The objective is to be out of any changes or anything that might cause disruption by the time Thanksgiving hits," he said.

Johnson said his staff has an annual holiday custom of reviewing Ames' network configuration and looking back at network data from years past. Ames is now operating in its second holiday season with the VSAT net it began installing in 1989, he said.

"In essence, we have timed the completion of our network to support the holiday season," Johnson said.

"Based on what we learned from the prior holiday season and what the loads were, we adjusted the capacity accordingly," he said. "We sit down and take a look at what our traffic volumes were and work with Hughes [Network Systems, Inc.] to determine if we have the proper amount of space segment assigned."

Harry Heintz, manager of communications services at The Circle K Corp., a retailer based in Phoenix, said his company avoids fiddling with the network during the holiday season as well. "Our basic strategy is just to make sure we are available in case anything goes wrong," he said.

According to Jeffrey Luker, a partner at Andersen Consulting, the best strategy for net managers at retail firms is to build the network to withstand peak traffic demands in the first place.

One change retailers can make to reduce the load on the network is to raise the threshold on credit card authorizations, Luker said. During much of the year, a retailer may require credit authorization even for small purchases. By raising the dollar threshold during the holiday season, fewer requests are sent over an already busy net, he said.

"The bottom line is that at this time of the year," Luker said, "you don't touch the network at all."

Firm's T-1 net to manage T-3

continued from page 1

Vyvx NVN, based here, was formed in November 1989 as a subsidiary of Williams Telecommunications Group, Inc. (WilTel).

Most of Vyvx's T-3 fiber network runs over WilTel circuits.

Vyvx NVN currently serves 10 cities but by April 1, it will be extended to 57 cities. In each of these, there will be a video center collocated at a WilTel point of presence (POP). Users typically connect to the center via an analog line that terminates in a Horizon analog switch from Grass Valley Group, Inc. The Horizon switch routes the signal to a Grass Valley video coder/decoder, which digitizes the signal and sends it to a Grass Valley DCC-45 digital T-3 switch that provides the link to the fiber backbone.

In February, StrataCom, Inc. IPX FastPacket multiplexers will also be installed in each WilTel POP to support the management network, Meiseles said. All 53 of the IPX switches, worth a total of $2.4 million, will be installed by the end of March.

The IPXs were chosen in part because they could route around failures faster than any of their competitors, which is important because a fiber cable cut would likely take down both T-3 and T-1 circuits, Meiseles said. The T-1 has to be reestablished before it can carry data that will reroute the T-3 lines.

The IPXs could do that 10% faster than Timeplex, Inc. multiplexers, which were passed over even though they were 15% less expensive than the IPXs, he said.

Intelligent workstations will also be installed in the video centers to run the net management software. The workstations will be linked to the DCC-45 and other equipment so the DCC-45 can monitor the health of the workstations and send routing instructions to the switches. A link to the IPX will allow that data to be shipped over T-1 lines to the net control center here, where Vyvx NVN personnel monitor the net.

"We don't need that much [bandwidth for] management data. We're kind of shooting a mouse with an elephant gun, but what we needed was a very reliable platform because we have a goal that, when there's a fiber break, we'll restore the video traffic within two seconds," Meiseles said.

Besides traditional management data, the Vyvx NVN management system will also support billing, reservations and a feature that gives Vyvx NVN customers routing control over their own circuits, Meiseles said. The company plans to issue a request for proposal next month to find a vendor to write the code for the system, which it hopes to implement within a year.

The new network management system will replace an interim control system that currently runs on three IBM Personal Computers attached to a Token-Ring Network located at the Vyvx NVN net management center here. Each Personal Computer can monitor and control eight remote video centers.

But that system, which runs over a T-1 net based on Coastcom, Inc. channel banks, requires manual intervention to reroute T-3 lines, whereas the new system will do that dynamically.

That is welcome news to Vyvx NVN users such as CBS. CBS currently backs up Vyvx NVN circuits with satellite links because it was not convinced that Vyvx NVN can reroute a failed link fast enough, said Brent Stranathan, CBS vice-president of broadcast distribution.

But Stranathan said the quality of the video received is better with Vyvx NVN's service than with satellite because scrambling devices aren't required with fiber cables.

And with fiber, there's no chance of double illumination, which occurs when two users uplink to the same transponder on the same channel and mar each other's signal.

CBS uses Vyvx NVN for 15% to 20% of its sports coverage and plans to use it more as the service reaches more cities, Stranathan said. To broadcast last January's Super Bowl, CBS used Vyvx NVN circuits backed up by satellite.

"In an event of that magnitude, we look for redundancy," Stranathan said. "It worked quite well, obviously. We're using more of it." ◘

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Santa: Please bring net gifts

continued from page 1

works to communicate transparently with one another would make an ideal holiday gift. Videoconferencing service links between the continental U.S. and Puerto Rico would be another fitting present, he said.

Straight-shooting vendors would make Harvey Shrednick happier in 1991. The vice-president of information services at Corning, Inc. in Corning, N.Y., said he'd like Santa to eliminate the "bureaucratese" he so often endures when negotiating with vendors.

"I want frank, unafraid, plain talk," Shrednick said. "Is it possible for Santa to bring me vendors that respond to my concerns with straight, unambiguous solutions?"

Chuck Garrison, vice-president of telecommunications at the Chicago Board Options Exchange, wants the identical present. He said he is frustrated with paying more than expected for products and services.

"I want vendors to quote me the true price of any equipment or service I'm considering, and that means the said price includes state tax, city tax, utility tax, assessment tax, access fees, usage fees, nonusage fees and annual maintenance costs," Garrison said.

Greater regard from executive management for the value of net technology is Woody Randall's fondest holiday wish. The vice-president of communications for Citizens & Southern National Bank of South Carolina said he wishes senior management would develop a clearer understanding of how network technology can fulfill its business goals.

"I hope Santa can help me find a better way to convince upper management that our network can be used strategically to increase productivity and lower costs," he said.

Richard Crane, director of communications at Massachusetts General Hospital in Boston, said he'd like Santa to prevent a two-year headache that will begin next month when he starts to lay new cables throughout the entire hospital.

"Some of our wires date back to 1929, so we're installing 7,000 new telephone station drops and 7,000 data drops," Crane said.

"It would be wonderful to wake up on Christmas morning to find that the chore's already been completed for me." Z

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